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ABSTRACT

The handbook contains eight chapters on aspects of the education of multiply handicapped, hearing impaired children. Chapter 1, by R. Nowell, presents a service delivery model for the education of this population. In Chapter 2, Nowell and S. Landino discuss psychosocial assessment procedures and instruments. T. Frank and C. Chorney survey audiological assessment methods in the third chapter. In Chapter 4, Nowell et al. describe the use of a structured curriculum. Nowell considers the selection of appropriate communication modes in the fifth chapter. S. Murdza and Nowell outline the use of language boards with multiply handicapped, hearing impaired children in Chapter 6. A program for parents designed to increase the effectiveness of parents as educators of their children is reviewed by M. Guido in Chapter 7. The final chapter, by D. Peters and S. Landinc, summarizes a three step program evaluation plan. An 82 item annotated bibliography is included. (PHR)

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# A HANDBOOK ON THE EDUCATION OF MULTIPLY HANDICAPPED, HEARING IMPAIRED CHILDREN

Edited By
Richard C. Nowell

MHEP

Multiply Handicapped Education Project
Communication Disorders Program
The Pennsylvania State University

June, 1980

Prepared for
The U.S. Department of Education
Office of Special Education
under
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# A HANDBOOK ON THE EDUCATION OF MULTIPLY HANDICAPPED, HEARING IMPAIRED CHILDREN

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June, 1980

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# FOREWARD

Bruce M. Siegenthaler
Marian A. Quick

Our clinical and research experience over the last several years has indicated that severely multiply handicapped children with hearing impairments often are not being adequately served. Although the major elements of adequate programs are known, there is a continuing void in delivery of optimal services to these children who often are widely scattered geographically. This scattering increases the difficulty in gathering them into training groups or in delivering necessary services to them in other ways. Methods of providing educational opportunities to severely handicapped children with hearing impairment may be falling considerably short of the U.S. Department of Education's priority for 1980, equal educational opportunities for all handicapped children. Estimates made in the early 1970's were that approximately 50% of multiply handicapped, hearing impaired children in the United States were not receiving services designed especially for this population (Schein, 1975). The more severely involved the multiply handicapped child with hearing impairment, the larger the gap is between the needs and existing services.

Although interest in the multiply handicapped child with auditory impairment can be found in the literature even before the turn of the century, only since the 1960's has there been a significant amount of published material which details diagnosis, parent guidance, programming, educational procedures, and vocational goals for these children. Schools for the deaf have begun to expand their programs to meet the needs of this population and the implementation of the Right to Education Act and the expansion of state special education programs have done much to improve opportunities for these children.

However, there is a great need in large state institutions for the severely retarded to identify those children with hearing loss. Brannon, Sigelman, and Bensberg (1975) reported on a survey of state facilities in which responses indicated that 7.2% of the institutionalized population were hard of hearing and that 2.3% were functionally deaf. Even though almost 10% of the population in these institutions were identified as being hearing impaired, more than half of the institutions did not indicate a special program for them. Use of sign language was reported, but extent of use among staff was hard to gauge. Among those who reported programs, a majority reported a single offering for both the deaf and hard-of-hearing. Only 12% provided multiple programs. While 10% of the institutions offered auditory training, speech therapy, hearing aid orientation, and language training, the amount of time spent in instruction was difficult to access. Estimates of daily instructional time for capable hard of hearing and deaf mentally retarded residents varied from an hour or less to six or more hours. The results of the survey dealing with a diagnosed hearing impaired population presents a bleak picture for even the capable hard-of-hearing or deaf mentally retarded residents in state institutions. In addition to the documented deaf and hard-of-hearing population in state hospitals, there are many severely involved children whose behaviors have made reliable auditory testing impossible. Their lack of communication skills suggests hearing impairment; their failure to respond to conditioning techniques limits the teacher in choosing appropriate goals in the communication area.

At the Laurelton Center, the Central Susquehanna Intermediate Unit (I.U. #16) and The Pennsylvania State University cooperated to institute a class for severely multiply handicapped children who also exhibited auditory impairment. The program operated for two years, ending in July of 1976. The students enrolled in the class were identified as having moderate to severe or profound mental retardation with multiply handicaps, including auditory impairment. A program utilizing base line behaviors, prescriptive teaching, total communication, individualized instruction, and the I.U. #16 Child Based Information System (CBIS) produced significant measurable improvements in many of the students' educational achievement. Some of these children have been successfully transferred to other school programs. I.U. #16 continued this program until cooperative efforts were instituted again with the awarding by the U.S. Bureau of Education for the Handicapped (now the Office of Special Education) of a contract to The Pennsylvania State University for a continuation and expansion of the program.

In general, severely handicapped children in Central Pennsylvania have been getting reasonably adequate health-educational intervention. They are being mainstreamed more frequently. Mainstreaming, however, may be leaving behind in the institution or at home the harder to manage and the difficult to test child. These children may not respond appropriately to test stimuli and may be hearing impaired, mentally retarded, emotionally disturbed, or have developmental problems. Accurate assessment is crucial, and hearing and intellectual capabilities, along with psychosocial adjustment, must be accounted for in intervention programs.

The severely multiply handicapped children with auditory impairment specifically addressed by this project had intense physical, mental, psychosocial, or emotional problems or a combination of such problems. While auditory impairment was one of their primary handicapping conditions, they may also have exhibited a variety of orthopedic, neurological, mental and emotional handicaps. Most of them functioned at the trainable to severe or profound level of mental retardation. The emotional problems involving some of these children included autism and childhood schizophrenia. Most possessed severe speech, language and/or perceptual-cognitive deficiencies. Many failed to respond to pronounced social stimuli, and others evidenced self-stimulating and self-mutilating behaviors or had intense and prolonged temper tantrums. Most of these children were non-verbal and susceptible to physical, social, psychological, and physiological insult.

The overt symptoms of the children included:

- lack of response, or irregularly occurring responses, to auditory or visual stimuli;
- lack of coordinated, integrated response to formal psychological tests;

- self abuse, self stimulation or destructive behaviors;
- lack of person-to-person rapport in a socially satisfying manner;
- random, apparently purposeless, movements;
- absent or deficient speech and language;
- awkward, uncoordinated physical movement;
- deficient activity of daily living skills, and deficient personal hygiene practices;
- bizzare, repetitive, inappropriate body postures, actions and vocalizations.

This type of population often has case histories suggesting pre-natal or birth injury, and they often are high risk babies. Parents report histories of much illness, poor motor development, lack of satisfying child-parent relationships, discipline problems, poor physical development, and poor learning skills. These children are far below behavior and developmental norms. Often they are untestable by the usual school methods, and many have not been in training or educational programs, especially in their earliest years.

The purpose of the present project was to implement the I.U. #16 plan at Laurelton for the education of severely multiply handicapped children with auditory impairment and to extend it over a larger geographical area of Central Pennsylvania.

The present project, drawing from the two years of preliminary work, had the objectives to:

- serve the severely handicapped, auditorily impaired child and youth in a variety of educational settings.
- involve parents of the handicapped individual in the developmental program which included elements of child rearing, educational, social-emotional, and vocational adjustments.
- further refine the use of educational procedures, providing a programmed and evaluated series of steps and methods for assessing or preparing individuals for assessment.
- demonstrate and disseminate the evaluation techniques, educational techniques, and parent counseling program elements of this program to foster their more widespread implementation in several environments, especially rural areas.

The principal procedures of this project were to:

- obtain definite hearing measures on the multiply handicapped population to identify students with normal hearing, students with mild hearing impairment, and students with severe hearing impairment. Thus the groups of severely multiply handicapped students could be referred for appropriate educational placement.

- obtain psychological and other related measurements.
- institute a proper educational program for these children based on comprehensive and accurate assessment.
- admit children into a diagnostic program which would enable proper school placement.
- involve parents and family in the child's educational training.
- refer when appropriate to ongoing educational or vocational programs.
- disseminate accurate assessment and teaching procedures to the educational community.
- operate a demonstration classroom at the Laurelton Center.
- prepare brochures and similar descriptive material about the needs and types of services that could be rendered.
- provide parent counseling.
- provide in-service experience for practicing professionals.
- provide evaluation of the project.

The major professional personnel on this project had expertise in the following areas:

- teaching severely handicapped, hearing impaired children
- psychological assessment
- parent counseling
- administration and dissemination

It is evident that a significant need exists for educating the severely multiply handicapped child with auditory impairment. The usual educational programming being provided for such children might, at best, be described as fragmentary, even though in at least some quarters the need is recognized and the elements of the desired programming are known and provided. In our project we intended to expand the practice, in several environments, of appropriate training and educational procedures and to disseminate information about these children, their needs, and what can be done for them.

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# PREFACE

In 1977 the Bureau of Education for the Handicapped (now the Office of Special Education) awarded The Pennsylvania State University a contract for what became known as the Multiply Handicapped Education Project (MHEP). Bruce Siegenthaler and Marian Quick, both of the Communication Disorders Program at Penn State, had written the proposal for continuation and expansion of a program already in existence at the Laurelton Center in cooperation with Central Susquehanna Intermediate Unit 16. I eagerly accepted the position as Coordinator of the project, unaware that my past experience in working with hearing impaired children had not truly prepared me for the difficulties of providing services for this multiply handicapped population.

During the last three years we have struggled to provide adequate services to a small group of multiply handicapped, hearing impaired children. Some of the problems that we incurred were unexpected and beyond our control. The work of three of our staff members was hampered by serious illnesses. Delivery of services was limited by two of the worst winters in the recorded history of central Pennsylvania. A myriad of other personnel and practical problems beset the project.

But beyond these superficial problems, I have come to appreciate the difficulties in providing adequate services to this very special population of children. The staff members who are successful in their work with these children--teachers, therapists, psychologists, audiologists--are very special people. They have done a tremendous job despite the lack of sufficient support from the field at large. Efficient systems for delivery of services to these children are rare, especially in rural areas. Few training programs in colleges and universities have courses that adequately prepare these professionals to work with this population. And, of course, the perennial problem of insufficient funding within special education service units continues to limit the extent to which optimal programs can be instituted.

Despite these problems, I have seen many of these children develop and learn through the efforts of dedicated people. The actual number of children that we have served over the last three years has been small. Our efforts have, therefore, been directed also toward providing a multiplier effect, that is, toward disseminating that which we have learned to other professionals for their use in working with multiply handicapped, hearing impaired children. We hope that this handbook will provide some information that will be helpful in the development of better programs for these children, that it will make some little contribution to the field, that it will help some teacher somewhere better meet the needs of a very special child.

In the words of Emerson,

> ....to leave the world a bit better, whether by a healthy child, a garden patch, or a redeemed social condition; to know that even one life has breathed easier because you lived. This is to have succeeded.

RCN

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# ACKNOWLEDGEMENTS

Many people have contributed both to the direct writing of this handbook and to the overall project which provided the basis for the book.

Don Peters made major contributions to the development of the service delivery model described in Chapter 1. Suzanne Murdza aided in the development of the model and was the living demonstration of the model in action.

Dr. Joseph French of the School Psychology Program at Penn State made valuable suggestions for the chapter on psycho-social assessment, and Suzanne Murdza contributed to the section on teacher-constructed instruments.

As indicated in Chapter 4, the CBIS curriculum on which much of the chapter is based was developed and written by the special education staff of Central Susquehanna Intermediate Unit 16.

Suzanne Murdza also made significant contributions to the development of the chapter on communication modes. Many of the specific ideas concerning language boards were provided by various speech and hearing staff members of IU 16, and a special thanks goes to Chris Lichtig and Hetty Metzger.

Don Peters provided valuable feedback concerning parent programs, and is responsible for some of the conceptual base of Chapter 7.

The original annotated bibliography was written by students in a seminar on multiply handicapped deaf children at Penn State in the summer of 1979. Jan Martin was responsible for organizing and collating the selections.

Suzanne Harpster slaved for many, many hours typing the manuscript. Marlene Neubert and Brenda Folmar of the Communication Disorders secretarial staff, and high school interns Brenda Whetstine and Linda Eisenhuth typed much of the rough draft from the handwritten scrawl of several of the authors. Suzanne Murdza and Mark Guido assisted in proofreading the text.

Norm Eschenburg originally designed the project logo and Marlene Neubert prepared it for the cover.

A. J. Grill of the Dean's Office, College of Education, provided administrative support and valuable suggestions in the production of the text.

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So many people have been involved with the Multiply Handicapped Education Project over the last three years in addition to the project staff and

those mentioned above that it is impossible to mention all of them. Many were involved behind the scenes at The Pennsylvania State University and at cooperating agencies. Without their help, the project would never have gotten off the ground.

A few names should be mentioned specifically for their contributions.

Faculty members of the Communication Disorders Program who made special contributions were Tom Frank, Fred Weiner, and Eugene McDonald.

Lois Summers and Marsha Wilkins kept the daily activities running in their roles as officer managers of the Communication Disorders Program.

Alice Holmes, doctoral student in audiology, supervised Craig Chorney's audiological assessment activities.

Jim Sampsell handled most of the technical business details for the project.

Numerous staff members of Intermediate Units 16, 8 and 11 made major contributions to the project. Strong support was provided by George Herman and Russ Gilbert as Special Education Directors, and by various supervisors, especially Fred Crowl. Staff of other agencies including the Laurelton Center, various MH/MR departments, child service agencies, school districts, etc., have cooperated with us in our efforts.

We would especially like to express our appreciation to the following teachers and aides: Ruth Anderson, Annette Butkera, Catherine Cashmareck, Joann Conrad, Mary Corbacio, Phil Dambrosia, Richard Devett, Rebecca Dietrich, Carole Eckman, Barbara Giavedoni, Twain Gonzales, Mary Harmon, Ramona Jacoski, Joyce Loss, Helen McMenamin, Marcy Mirachi, Sharon Ney, Loyce Osgood, Cathy Pallidino, Margaret Portzline, Sharon Reed, Mary Ann Rizzo, Bernice Schnure, Delores Schnure, Bertha Smith, Lorraine Stanley, Sandy Stoneroad, Ann Stott, Mike Thew, Carlene Vandling, George Virchick, Jeanne Weiss, Ginny Williams, and Barbara Zeller.

Members of the Advisory Committee who made special contributions include Helen Raines of the Whitehaven Center; Betty McCann of the Easter Seal Society of Pennsylvania; Dr. Joseph French, Dr. Thomas Frank, and Dr. Leon Gorlow, all of Penn State; Rev. Martin Lewis; Robert Niznik, Educational Supervisor at Laurelton; Fran Warkomski, State Coordinator of the Pennsylvania Materials Center for the Hearing Impaired; Lena Ulrich; Dr. Mary Haythornthwaite; and Don Bowman, psychologist at Laurelton.

I am sure that there are those who deserve special mention whose names I have inadvertently omitted and I beg their forgiveness.

We all give our thanks to the many children whom we have sought to serve, and who in turn have taught us so much.

Finally, this handbook is dedicated to the memory of Bill Jacobs, who brightened many of the days spent in the mundane activities of the project with his affable ways. He is sorely missed.

# CHAPTER 1

## A Service-delivery Model for the Education of Multiply Handicapped, Hearing Impaired Children

Richard C. Nowell

Upon observing a class of severely involved multiply handicapped children, one can easily observe that the educational process for these children is, to say the least, a difficult one. Behind the scenes educators are also faced with the administrative difficulty of delivering such services to these children. With the move in special education away from residential institutions to classes within the public schools, the logistics of delivery of services have changed. One advantage of specialized schools is the potential for bringing together children with similar problems and for having an extensive staff working in close proximity to each other to meet the educational and other needs of the children.

The advantages of a public school setting are accompanied by a different set of problems from those of the specialized school. Many of these problems are related to the heterogeneity of classes of handicapped children. Given the spectrum of handicaps that the children have, the administration of the Local Education Agency (LEA) is faced with a difficult situation in providing the best educational programs possible, a complicated service-delivery process that goes well beyond the hiring of the educational staff (which can be quite a problem in itself in programs for the multiply handicapped).

The focus of this chapter is on the delivery of services to multiply handicapped, hearing impaired children. Many problems with this population are similar to those with all severely handicapped children, but the problems are magnified with the tendency for a sharp distinction between the fields of those professionals working with these children. These problems will be discussed in the context of the typical situations which are encountered in the work of the project which has given rise to this handbook.

### Types of Placement

If a hearing impaired child with another major handicap or handicaps is placed in a self-contained classroom in a public school, certain patterns are often seen in the types and degrees of the various handicaps. The two primary types of classes in which these children are placed are classes for the retarded, usually trainable or severe/profound classes, or classes for the hearing impaired.

The hearing impaired child with a severe or profound degree of retardation is most often found in a class with other severely or profoundly retarded children. If a child has a hearing loss, some degree of retardation, and another significant handicap, such as a vision problem, the child is often found in a class for the retarded also. There are cases when a child with additional problems is placed in a class with other "normal" hearing impaired children. This is especially true with a child that is educably mentally retarded or sometimes even with a high trainable child who has no other significant handicaps besides a hearing loss. Hearing impaired children who have no other additional handicap besides a physical condition, such as an orthopedic handicap, are also often placed in a hearing impaired class.

Some practical considerations may play a large role in determining the placement of the multiply handicapped child. Parents may have certain preferences as to the placement of their child, sometimes for valid reasons and other times for questionable reasons (such as wanting to avoid the stigma of a certain label for their child). Educators must be careful not to form biases against the perceptions of the parents. Although many parents may make decisions and take positions involving their children based upon emotional reasons or incorrect input from other sources, many parents form their decisions and take positions based upon careful examination of data which leads them to believe that a certain course is correct for their child. Educators may all too easily discount parental input with the attitude that parents are just another obstacle to be overcome in the writing of Individualized Education Programs (IEPs).

Another important consideration in determining the placement of the multiply handicapped child is the geographic setting or proximity of the school. In an attempt to put together a homogenous group of children, an LEA may transport handicapped children excessive distances on busses. The educational problems of the multiply handicapped child is difficult enough without adding a couple of hours every day on busses going back and forth from home. If the decision is between homogenous placement with excessive bussing time and less homogenous placement and less wasted time, the latter seems preferrable, especially because most severely handicapped children receive teaching on a largely individual basis anyway, and thus homogeneity in a classroom is not always very valuable.

One other consideration for placement of a multiply handicapped child is the additional services that are available at a certain site. For the sake of proximity to a child's home or for providing the most contact with non-handicapped children, a certain school may be indicated. Such placement may be contraindicated, however, because certain services that could be very important to the child are not available in that school and are at another school. For example, physical therapists may not be present in a public school that has self-contained classes for the retarded or the hearing impaired, and if the child has an orthopedic handicap that requires regular services of a physical therapist, another placement might be better. Perhaps the strongest argument for placement in a special or "center" school is that in such sites the most extensive spectrum of services are usually available.

## Differences Between Rural and Urban Sites

Much of the information contained in this handbook is based upon experience in a program that has been obtained in a rural area. There are some differences in the provision of services in rural and urban settings, as is evident in the differences of the present project in central Pennsylvania and another similar project supported by the Bureau of Education of the Handicapped (Office of Special Education) through New York University in the New York City area. The program at Public School 47 includes five classes of multiply handicapped, hearing impaired children. Most of these differences can be attributed simply to the presence of more children with similar handicaps who may be placed in homogenous classrooms.

As was mentioned before, although some group work is done with severely disabled children, the primary advantage of homogenous classes of multiply handicapped children is not that such group work is easier with children who have similar handicaps. There are some definite advantages, however. Before a discussion of these, a better description of that which is meant by "homogenous" should be provided. Just as "normal" children are not all the same and a teacher must make some adaptations of work for individual children, handicapped children with similar disabilities are not so much alike that individualized programs are unnecessary. A "homogenous" class is usually one in which there are some definite characteristics which the children have in common. Some of these characteristics in the case of multiply handicapped, hearing impaired children might be degree of hearing loss, degree of retardation, mobility handicaps, and/or visual disabilities. The larger the population and the greater the incidence of these handicapped conditions, the more choice administrators have in grouping similar children together. In a school where there is more than one class of multiply handicapped, hearing impaired children, such grouping naturally becomes more possible. In a sparsely populated area, not only are there not usually more than one class of multiply handicapped, hearing impaired children, but usually there is no such class, and these children are, as previously mentioned, placed in classes for the mentally retarded or classes for the hearing impaired.

When a class for multiply handicapped, hearing impaired children does exist, one advantage is the possibility of obtaining a teacher who has specific training in working with this population. Some training programs already exist which provide this specialized training. Also many teachers may have had experience with this population either in the practicum work of their college or university training program or in past job experiences. Although preparation in this area is improving, even if a class of multiply handicapped, hearing impaired children has been established, it is more likely that the person hired to teach the class will have training only in one area, such as education of the hearing impaired or education of the retarded.

Different administrative problems face those trying to provide services to multiply handicapped children in rural areas from those in urban areas. The more densely populated area usually has more kinds of specialists and specialized facilities available. For example, if a child would benefit from assessment with Brain Stem Evoked Response Audiometry (BSERA), the medical facility and the qualified specialist to do such testing is not usually available in a rural area. There are certainly exceptional rural medical centers and institutions for serving the handicapped, but transportation to these facilities is often a problem.

Another problem in rural areas that is greater than that in urban areas is the continuity of specific personnel, as there is often a large turnover in the staffs serving the severely disabled. According to the Program Development Assistance System at the University of Washington, in April, 1980, there were at least 5,000 unfilled positions in established rural special education programs. Perhaps because they have received training in more urban areas or prefer to have the availability of leisure and cultural activities of a more urban area, many highly educated specialists often take jobs in rural areas only as a temporary measure until they can find jobs in more urban areas.

The resulting lack of continuity can have far-reaching results, especially because with some handicapped children, breaking down the communication barrier and developing rapport is half the educational battle. Also sometimes therapists and teachers are not required to keep the appropriate written descriptions of programs and a successor may have difficulty continuing the program. Furthermore, therapy or teaching strategies are often shaped by the individual's training background, and new teachers or therapists often want to change the direction of a particular child's program. The child that is caught in the middle of this staff game of musical chairs often makes little progress until having acclimated to a new person.

Vacancies in professional positions may lead to greater case loads and less attention for children. With a better tax base, urban areas may be able to afford more staff members and thus reduce the case load. Altogether the case loads of teachers and therapists are often unreasonable in both settings, given the needs of severely handicapped children. Rural therapists who are itinerant face the additional problem of having to spend much of their school day traveling from one school to another.

## How are the Services Delivered?

These conditions necessitate the most efficient method possible for the delivery of educational services to multiply handicapped, hearing impaired children. Perhaps the greatest concern in delivery of services should be how these services are coordinated. An organization must be established so that those who are providing direct services to multiply handicapped, hearing impaired children's programs have the proper supervision and assistance in executing their responsibilities. Some type of coordinator, either a person who already has supervision or teaching responsibilities or a person who is specifically hired as a supervisor for multiply handicapped, hearing impaired children must be ultimately responsible for seeing that such children receive the proper services. There are many issues about such a position that must be faced by the administration of a school district or special education unit. The following is a discussion of some of these issues. After this discussion, I will make some specific recommendations that are a product of the program provided through the Pennsylvania State University and the cooperating special education units.

One aspect of the position of a coordinator for multiply handicapped, hearing impaired children is the educational/training background of the individual. Should this person be a speech therapist, an educational audiologist, or a teacher of the hearing impaired? Or because most of the multiple handicaps include some degree of retardation, should this be a special education person trained in education of the mentally retarded? As previously mentioned, there are some programs in education of the hearing impaired that are training personnel to work specifically with multiply handicapped, hearing impaired children. Many programs provide an opportunity for people in the two fields to take course work in each area.

Should such coordinators be full-time staff members or have these responsibilities as only part of their duties? Can the special education unit afford to pay the salary of a person who is serving in such a position? What kind of case load would justify a full-time position?

Different special education units are quite different in their hierarchial structure. Where should a coordinator fit into such a structure? Should this person be on the same level as a regional special education coordinator or a speech and hearing supervisor? Or should this be a person who is a sub-supervisor under the person or persons who are responsible for the educational programs for hearing impaired children?

One possibility that might be considered by some special education units is the employment of an outside consultant to coordinate the efforts with this special population. (In the project administered through Penn State, we actually had both situations. In one special education area, a local staff person was the field coordinator for the area. In another special education unit, the overall project coordinator performed a similar function.) Several issues might be considered in making this decision. What is the availability of the person who is acting as a consultant as compared with an employee of the special education unit? What degree of continuity can be provided by an outside consultant? Would an outside consultant perhaps be more objective than someone in the special education unit in evaluating the needs and programs? How will other staff members of the special education unit react to having an outsider in such a position? Will they be more attentive to an outsider because that person is not just another supervisor? Or will they be skeptical of suggestions by someone who is not directly involved in the efforts of the special education unit? How much administrative power can such an outside consultant have? Can the special education unit give the coordinator the power to carry out decisions or would that person have to go through another supervisor to implement any plans? If the latter is true, how will that affect the coordinator's execution of duties? What is the cost comparison of employing an outside consultant as compared to hiring an inside person or increasing staff size to meet these needs?

## A Practical Approach

The answers to the questions posed above are not easy ones. The individual special education service unit will have to weigh the pros and cons of the various issues and make the best decision. One must have certain goals in mind while at the same time remembering practical (especially in terms of cost) considerations. Although my experience gives me some ability to offer opinions in this area, certainly there may be a lot of disagreement among professionals in the field. The following is an attempt, however, to make some basic suggestions as to the best way to coordinate activities for multiply handicapped, hearing impaired children in a special education unit, especially in a rural area where the number of staff members is limited even more than it is in an urban area.

## The Need for a Coordinator for Multiply Handicapped, Hearing Impaired Services

One strong assertion that I will make is that there must be some definite designation of a person for coordination of work with multiply handicapped children, and if the size of the population can justify it, specifically with multiply handicapped, hearing impaired children. The incidence of hearing loss among retarded and other handicapped children is such that the need is present. However, the idea of having a well-trained, experienced, full-time coordinator for services to multiply handicapped, hearing impaired children is certainly idealistic. The staff availability and financial resources that would allow such a situation unfortunately do not often exist. Several modifications of this ideal situation need to be suggested.

In reference to decisions about the role or job description of this person, the first decision must be either to hire a person to be a regular staff member or to employ an outside consultant. Our experience in the Penn State project leads me to support having such a coordinator be a part of the special education unit staff. In some cases an outside consultant might be more objective about that which is happening inside the special education service area, might not have to worry about organizational politics, and might have other related advantages. However, there are several reasons why an inside person is better. In general the costs of hiring an inside person should be more reasonable. To attract a person that is involved in other endeavors, such as a university teaching position, the special education service agency must pay high consulting fees to obtain the services of a qualified person. In addition, although an itinerant coordinator on the inside would require certain expenses to be covered, an outside consultant may have to charge initial travel expenses to the site and have the right to ask for many minor expenses that an inside employee would not necessarily need. Such expenses would increase also if the geographic location of the consultant is not actually within the area being served.

The person who is responsible for coordinating services for these children should have enough administrative power that recommendations would have programmatic influence with staff members working directly with the children. However, an administrator who must be responsible for the same type of budget considerations, personnel problems, and other administrative headaches as those who are more properly referred to as "supervisors" would not have time to execute properly the direct type of coordination that would provide sufficient services. The coordinator for multiply handicapped children might thus be referred to as working on a subsupervisory level. This person might report directly to one of the "supervisors" in the special education service unit. Depending on the most practical system for the individual agency, the person to whom the coordinator would report could be one of several supervisors. Many special education service agencies have a regional administrator or special education director. There are also speech and hearing supervisors, either one for the entire unit or regional speech and hearing people to whom the coordinator could also report. The supervisors would carry out the previously mentioned administrative details with the coordinator's input.

The incidence of the particular type of handicapping conditions may be so low in the special education region, especially in a rural area, that a large enough case load to justify hiring a coordinator for multiply handicapped, hearing impaired children might not exist. The coordinator might have other responsibilities that would increase this case load and still allow the proper services to reach multiply handicapped, hearing impaired children. One possibility is a "Coordinator for Special Needs." Such a person could coordinate services to children that require the attention of different types of specialists, including the hearing impaired staff. One aspect of this person's responsibilities might be to assure that at critical times important services are available, services which the special education agencies cannot usually provide. One of these important services would be work with parents. Especially when programs are begun with certain students, more involvement with parents is needed. Those in the service agency who might nominally be responsible for home services, such as social workers, often have such a huge case load that they can work only on a crisis intervention basis. Yet when parents are so vital to the child's overall program, at least some initial extensive contact is very important to set up channels whereby parents begin working closely with teachers and therapists to provide consistent follow-through in the home (see Chapter 7).

What should the professional background of such a coordinator be? Since communication problems are such an important part of the programs of severely disabled children, this coordinator should have training both in special education (perhaps with emphasis on the severely and profoundly retarded) and in some area of the speech and hearing field. If the coordinator has a background in education of the hearing impaired and in multiply handicapped, he or she should have had some training in related areas of speech and hearing, whereas a speech therapist or audiologist often is not trained in teaching the hearing impaired. Thus probably the best background would be training in education of the retarded and education of the hearing impaired.

What would be some of the regular types of activities in which this coordinator would be involved? One responsibility would be to review cases in which a multiply handicapped child is placed in a certain type of class to give additional input as to whether this placement is the best. The coordinator could meet with the other personnel at the beginning (or end, in some cases) of the school year to help develop IEPs. The coordinator would be responsible to see that different staff members' IEPs are closely related to provide consistency to the child's program in terms of goals, strategies for reaching these goals, and specific methodologies for implementing these strategies. Especially if the child is entering school or the region's schools for the first time, the coordinator would make sure that the proper input is received from parents, that any special services that the parents need to receive from the school are provided, and that the parents' cooperation is obtained from the beginning. Sometimes outside agencies such as residential institutions or group homes would need to be involved. Sometimes mental retardation/mental health agencies are involved in this process as well. In cases where the service agency depends on outside diagnostic services such as a speech and hearing clinic or audiologist, the coordinator would see that such diagnostic information is properly recorded and utilized in programming.

Once the child's program is initiated, this coordinator would make regular visits to the program sites, not as a watch-dog for the staff members, but to determine what special problems have arisen and what can be done to remedy these problems.

One skill that is invaluable for this coordinator is behavioral programming. Teachers and therapists often do not have the best training in this area, or if they do know how to implement such programs, they often are not skilled in writing programs themselves. Time constraints in terms of such special problems as disruptive behavior are great. The teacher often does not have the time while attending to other educational problems in the classroom to plan a program to solve such specific problems. Often the coordinator can objectively identify critical problems and write programs that can be implemented by the teacher or therapist.

Another area with which the coordinator might assist the special education service unit is in programmatic planning. Although it is not possible to present here some overall programs that will meet the needs of every agency, the coordinator would be in a good position to see what various specialists are doing with these multiply handicapped children and to make suggestions to the administration as to how the needs of these students could be more efficiently met through various tactical changes, such as scheduling changes, hiring of different types of specialists, and establishment of better cooperative arrangements with other agencies.

Special education units may suggest that they are already providing all of these services, or that the potential for all of these activities are in their present structure, and that they just need to be more efficient in their implementation. If the former is true, the agency is exceptional. If the latter is true, the agency administration needs to ask itself if the efficiency level will ever be such that proper services will be there without such a coordinator. The severely disabled child and the multiply handicapped child often receives services carried out in exceptional ways by exceptional staff members. But more services are needed. The lack of more extensive services is often not the fault of the special education agency, as they often do not have the proper financial and logistic support from school districts, state education offices, and federal agencies.

The purpose of this chapter is not to criticize the present state of services to multiply handicapped, hearing impaired children. It is to provide some suggestions in terms of the preceding service-delivery model incorporating the position of a "Special Needs Coordinator" to overcome the problems of the special education agency in the least expensive and most effective manner. Such a coordinator would not be a panacea, of course. The quality of staff members available to implement the services, the cooperation of parents, the cooperation of other agencies, and other factors that are often beyond the control of the special education unit are all crucial aspects in the success or failure of programs for severely disabled/multiply handicapped children.

The needs of multiply handicapped, hearing impaired children are such that innovative means of educating them and of arranging for the delivery of educational services are required to give these children the greatest chance of success. The individuals that work on a day to day basis with these children are very special people. They work to overcome odds that are distinctly against the individual child. These teachers and therapists need the best possible administrative support from the special education service unit. The purpose of this chapter has been to make some concrete suggestions as to an organizational strategy for delivery of services. Although the special education administration may choose a very different route than suggested here, if some suggestions have been made that contribute to a more efficient delivery of services, the purpose of this chapter has been accomplished.

## CHAPTER 2

# Psycho-social Assessment of Multiply Handicapped, Hearing Impaired Children

Richard C. Nowell
Susan Landino

As part of the services supplied to cooperating local education agencies (LEAs), the project which led to the development of this handbook assisted in the psycho-social assessment of children identified as candidates for the project. By psycho-social we are including a spectrum of areas such as cognitive/intellectual level and behaviors, general social competencies, emotional adjustment, and various motoric behaviors. Naturally such a large spectrum is rather an overwhelming task for a practical, brief evaluation. The specific areas evaluated for any particular child were those areas most crucial to the child's present educational program. Another consideration was the area in which there was a lack of information.

Given the range of children with whom we were involved, the testing was quite diverse. For example, the retardation of some of the children was so severe as to allow evaluation only in the areas of gross and fine motor skills and other information gathered in such instruments as infant development scales. In certain cases the children were functioning so adequately in terms of motor skills, that no consideration was given to doing further testing in this area, but instead intelligence/performance tests were administered.

This has been just a brief introduction to give the reader an idea as to the great range of types of testing that must be carried out with this population. To describe the population more fully, the intelligence levels of the children were from profoundly retarded to normal intelligence, with such handicaps in addition to hearing loss as blindness, central auditory processing difficulties, learning disabilities, developmental delays, and various motoric disorders. We were involved in assessing one child who was severely mentally retarded and profoundly deaf and another who was deaf and blind, and had a progressive degeneration of motoric control. One child was severely retarded, motorically involved, hearing impaired, and had a severe behavior problem, and another was only educably retarded and had only a moderate to severe hearing loss. The specific instruments and strategies for assessment were naturally quite different for each of these children.

One theme that will keep emerging from this discussion of assessment will be the need for a team approach by the professionals working with a child. But the primary input to most children's assessment often comes from two sources, the school psychologist and the teacher. We would like to discuss the role of the school psychologist as the primary agent of assessment and the role of the teacher as the person who most crucially needs this assessment and who is the second person most involved in the assessment process.

For the professional who works only peripherally with assessment and the school psychologist, a certain over-simplified role of the school psychologist is often perceived. With some school psychologists perhaps this simplication is not extreme. In recent years the role of the school psychologist has changed greatly. The psychologist's role as an administrator of tests and the primary source of placement data is a well-known one. This is still evident in that in many LEAs the school psychologist is the primary placement officer.

The implication here is not meant to be critical of the role of test administration, interpretation, and consequential recommendation for placement. However, with the severely or multiply handicapped child, the school psychologist's role is ideally much more extensive, as indeed is the case with many psychologists. In general the role of the psychologist has expanded to include the following: educational consultation and the development of educational and behavioral programs; counseling individual children and group sessions with children; and other group sessions with parents of handicapped children.

We would like to discuss some general principles of these areas as they apply to working with multiply handicapped, hearing impaired children. The particulars both as to extent of the services and the specific type of service once again depend upon the individual child. One aspect, however, that would be included with every child is assessment.

Assessment, however, need not be extremely quantitative, nor used primarily for placement purposes. Indeed, with multiply handicapped children assessment is almost always more qualitative and for the purpose of educational programming. The main goal of the assessment process should be to identify the strengths and weaknesses of a child. What can this child do? What can the child not do? What are the resultant influences on making decisions about educational goals, strategies, and prognoses?

Once again we must stress that the psychologist's input must be only one of the sources of information about the child. The multiply handicapped child has contact with a variety of professionals and they all must provide their input if those making educational decisions are to receive the best overall picture of the child's needs and capabilities. The psychologist usually provides the most objective data that, in combination with other information, especially from the classroom personnel, is the most beneficial in knowing where the child is going and how to get there.

Very often psychologists are the people most oriented in collection of data for assessment purposes. They are often the ones responsible for pulling together the information from diverse sources for the assessment process. In some cases the psychologist may need to train other professionals and para-professionals to collect data in the classroom, in other school settings, and at home. In the context of this other information, the psychologist can provide an overall assessment package that will have an effective influence on the child's educational program.

Several duties emerge as we look at the school psychologist as an assessment specialist for multiply handicapped children. The psychologist establishes some base line data that assists in knowing how much progress the child has made. The psychologist works closely with the teacher, complementing her skills in planning the child's program. When special problems arise that require specific programming, especially behaviorally designed programs, the psychologist usually is the person most qualified to develop such programs. When the data collection comes to the point that the various professionals need to meet for a staffing, the psychologist is often the one who provides the organizational structure for such staffings.

## Base Line Data

Whereas the primary effort of those more directly involved with multiply handicapped children's educational programs may be to develop teaching strategies, the psychologist more directly addresses the question of where children are in relation to normal development and to their own former levels. When a child is beginning an educational program or a new school year, data is also needed to know later how much that educational program is helping the child. In some cases such children have been in educational programs without any objective record of the point from which they started. For the purposes of evaluation of the program and the specific success with a child, some measures are needed that can be repeated at various times during the child's program. Although progress through a curriculum is one aspect of a child's progress, for documentation on a more global and relative scale, information is needed to know what the child is capable of doing in terms of cognitive, motoric, and social skills. Some specific tests that can be used for this purpose will be discussed later in the chapter.

## Support for the Teacher

The teacher is responsible for the application of information collected by various professionals to the child's program. Although others working with the child, such as physical therapists and speech and language therapists, may both use this information and provide input that is significant to other aspects of the child's education, the teacher of the multiply handicapped child is in crucial need of assistance from the school psychologist. Perhaps the strongest support that the psychologist can give the teacher is objective observation of the effectiveness of the educational program. The teacher is more concerned with the day to day practical educational questions concerning a child, but the psychologist can ask more general (and more ideal) questions, such as "Can this child really progress more successfully with certain changes in programming?" Teachers are often not as well trained in certain principles of behavior and reinforcement patterns so that they may miss some aspects of the program that are interfering with the children's progress, aspects that psychologists may be able to observe. In certain cases these observations or a direct request from the teacher may lead to more direct involvement from the psychologist, especially in terms of the development of behavioral programs.

## Development of Programs for Special Problems

Whether one's general approach to education and learning is more cognitive or behavioral, one can often see the extremely positive results of behaviorally oriented programs, both in terms of actual behavior modification and more cognitively related aspects of multiply handicapped children's programs. One of the greatest problems with this population is control of behavior that interferes with the educational process. Teachers of "normal" primary and secondary children often complain that they spend too much of their time as disciplinarians. This problem is magnified greatly with many multiply handicapped children. In some cases the primary goal for the severely retarded child is to control undesirable behavior to permit successful training in such basic areas as self-help skills, or even just to allow custodial care to be a more positive experience for the child.

For the less extreme case, there is still a great need for the involvement of the school psychologist to develop programs that will more efficiently reinforce desired behaviors and discourage disruptive behaviors. This is true both with the institutionalized child and the non-institutionalized child. Certain problem areas such as attention span, physical encroachment on other children's areas, self-stimulation and abusive behaviors, and general lack of cooperation with the teacher are areas which need successful intervention before more sophisticated skills can be developed. Yet teachers often have weak training in these areas. The school psychologist can be instrumental in both identifying the behavior that needs to be changed and in developing the specific strategies to do the changing. The psychologist's main efforts in this area will probably be in two areas, either training the teachers to develop such programs or in the actual writing of programs. Teachers are usually well versed in implementing such programs once they exist. In some cases principles of reinforcement, especially as they relate to consistency, may need to be taught to the teacher. In addition, the psychologist will be needed to monitor the success of such programs.

The success of the psychologist's support of the teacher and the development and implementation of behavioral programs for multiply handicapped children depends heavily on effective cooperation between the school psychologist and the teacher. Proper administration of these efforts and the successful establishment of rapport between the teacher and the psychologist is important. Perhaps this point seems trite or obvious. It has been our observation, however, that the lack of such rapport, often because of the lack of an established process of cooperation, is not unusual. More administrative effort may be needed in this area. The psychologist also must respect the teacher's position and carefully consider the teacher's more subjective input. At the same time, the teacher must listen objectively to the psychologist. Sometimes teachers become so involved in daily school chores that they are resistent to input from "outside experts".

## The Staffing Procedure

One vital aspect of the cooperative effort of the various professionals participating in educational planning for multiply handicapped, hearing impaired children is a time when all of those concerned can sit down together and discuss their various ideas about the child's programming. This meeting is often called a "staffing" and may be an integral part of the IEP process for the child. However, meetings may be held at other times than just the beginning (or sometimes the end) of the school year when IEPs are usually developed. The school psychologist is usually in the best position to take the initiative to bring people together when assessment results need to be discussed and plans made.

Administratively the psychologist, depending upon the accepted procedure within the LEA, may go through a coordinator for special needs, a speech and hearing supervisor, or a special education supervisor. Sometimes such staffings can just be handled through those providing the direct services, perhaps the teacher or the psychologist. Certainly one would want these professionals to have had such communication with each other that they have discussed many of their ideas prior to the time of the staffing, but the staffing ideally allows a time for everyone to sit down together and discuss the issues. Each of the professionals has a different contribution to make to the meeting, including the psychologist.

The specific contribution by the psychologist usually is data which he or she is best qualified to collect. These data are usually the most nearly objective information on the child of all the assessment (except for basic information such as medical and audiological reports). The psychologist may use any of several types of tests that provide information in the areas of intellectual, social, emotional, and behavioral development. The following is a discussion of several of these instruments which we have found especially useful with multiply handicapped, hearing impaired children. Following the discussion of these instruments is a discussion of some principles for administration of these tests and some specific examples of how they have been used.

## Assessment Instruments

Assessment of the multiply handicapped child, unlike that of a typical child in special education, requires not only flexibility of approach but also knowledge of specialized devices. The testing of these children has been called "adaptive" by some, while others consider such procedures "breaking the rules". Nevertheless, with the constraints of necessity and availability, the following devices were used extensively in the assessment of our multiply handicapped children:

(1) Hiskey-Nebraska Test of Learning Aptitude

(2) Leiter International Performance Scale

(3) The Bayley Scales of Infant Development

(4) The Vineland Social Maturity Scale

(5) American Association on Mental Deficiency Adaptive Behavior Scale - Public School Version

(6) Bender-Gestalt Test for Children and Goodenough-Harris Drawing Test

Hiskey-Nebraska Test of Learning Aptitude. The Hiskey-Nebraska is an individually administered test used to assess the learning aptitude of both deaf and hearing children from 3 to 16 years of age. Instructions are given in pantomime to deaf children while the response mode is motoric, e.g. pointing, stringing beads, and drawing. In reference to our project population, the Hiskey was most useful with our hearing impaired, trainable mentally retarded and higher functioning children whose vision and fine motor ability were adequate for the required responses. We found the Learning Age (LA) and Learning Quotient (LQ) which the test yields to be helpful in obtaining a global view of the child's mental ability. This is one of the few tests normed on a deaf population and Salvia and Ysseldyke (1978) consider the Nebraska Test of Learning Aptitude to be the best available device for assessing the learning ability of deaf children.

Leiter International Performance Scale. The Leiter International Performance Scale (LIPS) may also be used to assess intellectual functioning of deaf and hearing impaired children. The age range for the test is 2 to 18 years of age, and directions are given in pantomime with a nonverbal response required. Because the required response is consistent throughout the test (placing blocks in a wooden frame) and acute motoric ability is not necessary, we were able to use the LIPS even with severely retarded "hard-to-test" children. The LIPS yields a mental age (MA) and a ratio IQ. However, Salvia and Ysseldyke (1978) suggest that these scores be viewed with caution. We found testing with the Leiter to be a valuable source of acquiring qualitative information about a child's cognitive ability.

The Bayley Scales of Infant Development. With extremely low functioning children, primarily severely and profoundly retarded, who might be labeled "untestable", the Bayley Scales of Infant Development were used. The test includes three sections--a mental, a motor, and a behavior scale. With the assessment of such low functioning children, however, the existing discrepancy between the age range of the test (2 to 30 months) and the chronological age of our multiply handicapped children made interpretation of quantitive results useless and inadvisable. Nevertheless, by using the Bayley Scales, indications of children's mental, motoric, and behavioral development were obtained. In these cases, the assessment device was best used as a research-based guide for observation and data collection. It could also be used to determine entrance points in a curriculum and to indicate gains made by the children over time.

The Vineland Social Maturity Scale. In the area of social maturity, two scales were administered consistently. With the residential population, the Vineland Social Maturity Scale was most appropriate. The Scale, administered in an interview format to an informant, evaluates social competence in a variety of areas--self-help (general, eating, and dressing); locomotion; occupation; communication; self-direction; and socialization. As can be seen, the scale taps areas that might only be familiar to a parent or residential home staff member. It should be noted, however, that the scale was normed on a non-handicapped population, and, therefore, quantitative information on a multiply handicapped child should be viewed with caution. The information obtained, however, may be used in educational planning.

*American Association on Mental Deficiency Adaptive Behavior Scale--Public School Version*. For the public school population, the American Association on Mental Deficiency (AAMD) Adaptive Behavior Scale--Public School Version was used. Although similar to the Vineland in that it assesses behavior though an interview with a third person, it differs in that it is intended for use with handicapped persons and includes only those domains which pertain to school and can be readily observed in a school situation. Teachers served as informants for the public school children and, again, qualitative and quantitative information was collected. Salvia and Ysseldyke (1978) suggest caution in the use of some of the percentile scores, however, because of inadequate number of children in certain norm groups. This information also may be helpful in planning curriculum entry points.

*Bender-Gestalt Test for Children and Goodenough-Harris Drawing Test*. In addition to an intelligence or infant maturity measure, indices of perceptual-motor ability and drawing tests were sometimes administered. However, they were used only with higher functioning, less involved children. Specifically, the Bender-Gestalt Test for Children, a measure of visual-motor integration, and the Goodenough-Harris Drawing Test, a measure of intellectual maturity, were utilized to gather additional and/or supporting data for decision-making.

The following is a list of the above instruments and the publishers' addresses.

| Test Name | Publisher |
|---|---|
| AAMD Adaptive Behavior Scale--Public School Version (1974 Revision) | American Association on Mental Deficiency<br>5201 Connecticut Avenue, N.W.<br>Washington, DC 20015 |
| Bayley Scales of Infant Development* | The Psychological Corporation<br>Division of Harcourt Brace Jovanovich<br>304 East 45th Street<br>New York, NY 10017 |
| Hiskey-Nebraska Test of Learning Aptitude* | Marshall Hiskey<br>5640 Baldwin<br>Lincoln, NE 68508 |

| | |
|---|---|
| Leiter International Performance Scale* | Stoelting Company<br>424 North Homan Avenue<br>Chicago, IL 60624 |
| Vineland Social Maturity Scale | American Guidance Service, Inc.<br>Publishers Building<br>Circle Pines, MN 55014 |
| Goodenough-Harris Drawing Test* | The Psychological Corporation<br>Division of Harcourt Brace Jovanovich<br>304 E. 45th Street<br>New York, NY 10017 |
| Bender-Gestalt Test for Children* | American Orthopsychiatric Assn., Inc.<br>1790 Broadway<br>New York, NY 10019 |

*Restricted Scales

## Administering Test to Multiply Handicapped Hearing Impaired Children

Because children with sensory problems such as hearing loss cannot be expected to receive test instructions nor respond in the same manner as children without sensory problems for whom a particular instrument was developed, a few words should be said as to general principles that should be followed when administering instruments to the hearing impaired. Children with mild and even moderate hearing losses may need only minimal adaptations to receive test instructions, especially if they have good receptive language skills. However, for the severely or profoundly deaf, greater care must be taken to assure that the results of the test are truly indicative of the child's ability, and not of the tester's inability to test a deaf child.

One assumption that is often made by test administrators about deaf children is that if directions are presented in sign language, they will be communicated readily to the child who depends primarily on that mode for communication. The sign language ability of children who sign varies greatly and one must know the child's sign language level to be able to present information in the proper manner. In addition a child who has been exposed to one form of sign language, such as American Sign Language, may not necessarily understand the particular form of sign language with which the tester is familiar. The tester should at least converse with the child in signs before testing to ascertain exactly how efficient a mode of communication signs are for the child.

Many special children, especially hearing impaired children, may indicate in some way that they understand directions when they do not. One should not assume that a nod of the head actually means that a child understands. A verbal response which seems to indicate understanding by a child who speaks or signs may also be misleading. To be sure that a multiply handicapped child understands the directions, one may have to deviate from standard procedures. Repeated directions followed by additional practice items may be needed. This may be true even for a test where nonverbal directions are given. Repeated demonstrations or gestures may be necessary to convey the directions to the child effectively.

Despite these types of efforts, there may be times when the tester is not sure that the performance truly indicates the ability of the child in other situations. For example, on the figure completion on the Hiskey-Nebraska, the nonverbal directions are such that one cannot be sure that the child understands the concept of putting in the missing part. A retarded, hearing impaired child may draw on the paper as if the task were simply to add something to the existing drawing, with no indication of an understanding of the concept of completion. Perhaps the child's inability to figure out the task gives the tester important information about the child. But the question could always arise as to if the communication situation were better, could the child understand what is expected and complete many more drawings. A child who is more verbal but just as retarded might complete several drawings following verbal instructions, whereas the deaf retarded child might not really understand what is expected. Therefore, the tester should be sure to record any impressions as to whether the child's performance is indicative of actual ability or the result of some other factors such as inability to understand the directions, poor attention span, motoric involvement, or emotional reaction to the situation.

In this context we would like to give brief descriptions of the assessment procedures used with some of the children involved in our project.

> R. is a six-year-old hearing impaired child attending a "Developmental Class." In the test situation he used speech sparingly, and when he did, his speech was unintelligible. A previous administration of the Stanford-Binet Intelligence Test, primarily a verbal measure of intelligence, yielded an I.Q. of 61, warrenting the label "Educable Mentally Retarded (EMR)." The Leiter International Performance Scale was administered and R. obtained an I.Q. of 90, placing him in the average range of intelligence. To verify this result which was so discrepant from previous testing, a second measure of cognitive ability was administered. On the Nebraska Test of Learning Aptitude, R. achieved a Deaf Learning Age of 6-0 and a deviation I.Q. of 91. R. at this time neither responds well to spoken language nor initiates effective verbal communication. He is somewhat impulsive in his approach to tasks. Nevertheless, R. has average intellectual ability and, with emphasis on communication skills, should be able to function adequately in a hearing impaired class.

> J. is a fifteen-year-old hearing impaired and visually impaired boy functioning in the moderate range of mental retardation. He is primarily non-verbal and relies on various sounds accompanied by gestures to communicate his wants. Evaluation with the Leiter International Performance Scale was consistent with previous assessments, and resulted in the classification of moderate mental retardation (I.Q. = 38). Continuation of J.'s present placement was recommended.

> W. is a hyperactive, seven-year-old, hearing impaired boy functioning intellectually at the trainable mentally retarded level. Although performance tests were given to assess his cognitive abilities, testing was primarily intended to obtain an indication of the types of behaviors and social skills exhibited in school. The AAMD Adaptive Behavior Scale was administered with W.'s teacher serving as informant. Results highlighted both distractibility and hyperactive tendencies and indicated W.'s specific self-help, motoric, and socialization skills.

> D., an eleven-year-old boy, is both retarded (trainable level) and hearing impaired. Formerly a resident of an institution for the mentally retarded, he attends a public school, hearing impaired class. To obtain qualitative information about D.'s social competence, the Vineland Social Maturity Scale was administered in an interview style to D.'s teacher and the project's Home Visitation Specialist. D.'s ability levels in self-care at home and in school-related activities, e.g. drawing, writing, and playing simple games, were identified.

## Assessment by Educators

Although we have stressed the role of the school psychologist, the teacher, hearing therapist, or other staff member directly involved with providing educational services may often be called upon to administer some of the preceding instruments. Although there are legitimate objections to an untrained person administering some tests, the reader is reminded again that the primary emphasis in testing multiply handicapped children is qualitative. Tests standardized on a normal population may be much better as qualitative tools than tests a teacher might develop. Therefore, although we are very aware of the objections to using standardized tests for other than their intended purposes, we would encourage teachers to use these tests or parts of the tests for qualitative information. If one uses a standardized test and administers it in a standardized manner (or with well-documented adaptations), one is much better able to compare future results when the same test and administration procedure is used.

Of course, if a standardized test is used for a purpose other than that for which it was designed or administered in a manner other than standard, one must be careful about interpretation of results. In fact, because of the various problems in the administration of tests to multiply handicapped children which were discussed previously, interpretation of any test results with this population is difficult.

## Constructing Tests from the Curriculum

When the objective of assessment is to evaluate the educational program or to establish base line data for a particular child, one source of instrument construction for the teacher is the curriculum itself. This is particularly true when the teacher is using a structured curriculum (see Chapter

4). As a teacher refers to the curriculum to decide what goals should be established for a child, he or she must naturally know where the child stands in the educational program at that time. When detailed objectives and criteria for success already exist in the curriculum, the teacher can pull from them ways of testing the child to determine where in the curriculum to begin the child's program.

The use of the curriculum objectives as a basis for constructing test items is particularly efficient when the objectives for a particular strand or performance area are developmental in nature. When one skill is listed as a prerequisite to proceed to the next objective, one naturally must know if the child has met that objective before attempting to take the child through the instructional process for the next objective. By examining the criterion for success for a particular objective, the teacher can develop a way of testing for the criterion without going through the instructional steps and, therefore, determine if the child is already capable of doing the task. From this process the teacher can establish starting points for the child in the various strands of the curriculum.

With items developed from a curriculum one must determine the criterion for passing so that the assessment can be replicated at a future time and good comparisons can be made. As previously stated, this is one of the advantages of using standardized tests with standardized administration procedures. But there is no reason why tests developed from the curriculum cannot be used in the same manner if care is taken in recording how the testing is done and what the basis was for the particular scoring.

As the teacher proceeds in the multiply handicapped child's educational program, a diagnostic teaching approach may be very desirable. That is, the teacher should be carefully following the child's progress in every step of the curriculum and take special care in recording all pertinent data. Although this diagnostic teaching is an integral part of any structured curriculum, the teacher may not be required with the particular curriculum to indicate progress more often than quarterly or semi-annually. However, if the teacher regularly documents the monitoring of the child's progress with clear indications that the child has mastered certain skills, there will be a clearer picture of the child's specific capabilities.

As the teacher seeks to complete a picture of the abilities of the multiply handicapped child, input is needed from other professionals working with the child and the child's parents or residential workers. Records of these other people's feedback as to how the child is functioning in environments other than the classroom is crucial to the overall picture of the child. Those working with special children are familiar with the discrepancy often found in reports of different people, especially parents, who have contact with a child outside of the classroom and evaluations by the classroom teacher. Sometimes the untrained eye (or the biased eye) cannot see what the classroom teacher can see, and reports that the child either is capable of tasks that the child has not done in the classroom or cannot do tasks that the child has successfully done in the classroom. However, sometimes this discrepancy may not be caused by the observer's reports but by the way the child functions in different environments.

Whatever the accuracy of such reports, they should be carefully recorded so that a complete picture of the child's functioning can be assessed and so that the reason behind any discrepancy can be resolved. If the child indeed does function differently in different environments, an effort should be made to discover why this is true. The child could be responding differently to different assessment procedures. For example, the child could function poorly under formal conditions but when asked to perform informally in the home, show mastery of certain skills. Or the child could be learning within the context of certain environments and require concentration on the generalization of skills to other environments.

## Summary and Conclusions

Any educational program for multiply handicapped, hearing impaired children will encompass a wide spectrum of children in terms of type and degree of handicap. The traditional role of the school psychologist with these children has been to administer standardized tests, record and interpret results, and assist in the proper placement of the children. This role has been changing in recent years, however, and with the multiply handicapped child, the school psychologist must ideally be involved in educational consultation, programming, and direct involvement with the children and their parents.

Assessment procedures with multiply handicapped children have as their primary goal the establishment of a qualitative data base to aid in the best educational planning for the child. Quantitative scores may be possible in certain cases, and certain standardized tests may be especially helpful in obtaining both quantitative and qualitative measures with this population. Any school psychologist involved with this population needs to use special considerations when administering these instruments and interpreting the results. The teacher and other educational personnel also may contribute valuable assessment information to help in the child's program, and the use of a structured curriculum which incorporates regular assessment procedures in the teaching process may be of particular value.

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# CHAPTER 3

## Audiological Assessment of Severely Multiply Handicapped Children

### Clinical Assessment

Tom Frank

My clinical experience indicates a higher incidence of auditory dysfunction among the severely multiply handicapped than in comparable non-handicapped populations. The auditory dysfunction may include an impairment in acuity and/or an inability to interpret sound in a meaningful way. The higher incidence in auditory dysfunction (peripheral and/or central hearing loss) among the severely handicapped can be related to several co-existing factors including cranio-facial-skeletal abnormalities, central nervous system (CNS) dysfunction, physical and/or mental developmental delays, and/or emotional disturbance problems.

Severely multiply handicapped children with auditory dysfunctions often communicate primarily in a non-verbal manner. Because they can neither receive spoken language nor speak themselves, these children are often assumed to have peripheral hearing losses. Although peripheral hearing losses may be present, the non-verbal behavior may also be caused by developmental delays and/or central nervous system dysfunctions. In some cases the absence of a response to sound is not necessarily an indication of auditory dysfunction. The younger the child or more severe the developmental delay and/or CNS dysfunction, the greater the likelihood of no response to auditory stimulation.

The majority of multiply handicapped children who develop speech usually do so at a later chronological age than normal children because they need more time to develop the necessary receptive language and intellectual capability. Developmental delay is one of the most significant symptoms in differentiating auditory dysfunction from co-existing problems. That is, the audiologist must try to determine whether an auditory dysfunction is only a manifestation of general developmental delays, or whether a true auditory problem exists. A child's overall behavior in the presence of various auditory stimuli must be related very carefully to all other behaviors. Auditory tests and procedures must be developmentally appropriate for the child who is being tested.

One of the purposes of this chapter is to discuss the procedures and techniques for evaluating severely multiply handicapped children. The procedure has been divided into five major categories: (1) pre-evaluation; (2) testing facilities; (3) evaluation procedures; (4) interpretation of tests results; and (5) educational implications.

### Pre-Evaluation

My pre-evaluation procedure includes reviewing the child's diagnosis, medication, and previous test results, obtaining auditory ratings, and conducting observation. Information concerning a child's diagnosis and medication may be obtained by consulting with the attending physician and/or by reviewing the child's medical chart. A diagnosis is reviewed in reference to audiological-otological manifestations. That is, a child's diagnosis may be a particular syndrome known to have audiological-otological sequelae. For example, a child with Down's Syndrome should be placed at greater risk for middle ear disease and a conductive hearing loss than for a sensorineural loss. On the other hand, if the cause of the multiple handicap was Rubella, a child should be placed at greater risk for a sensorineural hearing loss than for a conductive loss. A diagnosis is reviewed to see if the handicapping conditions are congenital or acquired. Children with acquired multiply handicapping conditions usually have a greater risk for sensorineural than for conductive losses.

A child's medication and medical history are also reviewed to determine if the child is receiving medication for a seizure disorder or other CNS disorder which might influence auditory responsiveness. Medication is checked to see if it might be ototoxic or have other side effects such as slurred speech or dizziness. Medical history is checked for childhood diseases, upper respiratory infections, and middle ear problems which could cause a hearing loss independent of other problems.

Results of previous evaluations are reviewed. These may include psychological, educational, neurological, speech and language, and previous audiological and otological evaluations. This information can add to the planning of the test battery and expected auditory response. Also, much information about a child's overall functioning level may be obtained by integrating the results of previous evaluations.

To obtain independent observations of a child's auditory behavior, I have the child's response to auditory stimulation rated on a one-to-five scale by the child's teacher, by a speech/language therapist, and, if possible, by one of the child's parents. A rating of "one" implies that a child's behavior is not changed by auditory stimulation; a rating of "five" indicates auditory stimulation definitely changes a child's behavior. These ratings result in information about a child's behavior to sound which influences the planning of the audiological evaluation. I also have raters describe what type of sound elicits a maximum response from a child. For example, some children respond better to music than speech. Also, I ask if a child responds well with amplification provided by an auditory trainer, tape recorder, and/or phonograph and whether or not a child has worn or likes to wear earphones. These ratings and descriptions of a child's listening behavior and conditions which elicit maximum responses to sound are extremely important and should be carefully studied. Some times a child may react very differently in a sound suite compared to the classroom and this difference may lead to an incorrect diagnosis of hearing ability.

The final part of the pre-evaluation procedure consists of a physical and behavioral observation of a child. Physical observation includes checking for position and development of the outer ear, cerumen in the external ear canal, cranio-facial and skeletal features, abnormal pigmentation, and visual tracking. A child with low set ears and/or abnormal auricles is considered at risk for a hearing loss. If a child's ear canal is impacted with cerumen, the cerumen should be removed prior to the audiological evaluation. If it is not removed, the results of the audiological evaluation may indicate a mild to moderate hearing problem and/or non-compliant eardrum mobility. A child with cranio-facial, neck, and upper torso, skeletal abnormalities should also be placed at risk for a hearing loss because of the possibility of middle and/or inner ear abnormalities. Visual tracking ability is also checked to see if the child has the ability to be stimulated by a visual reinforcement device sometimes used in an audiological evaluation.

Careful attention should be given to a child's activity level. If a child is very active, the audiological evaluation should be completed in the shortest time possible. On the other hand, if a child is very inactive, one should be concerned about the child's CNS involvement and/or medication. A child's listening ability should be rated by an audiologist on the same one-to-five scale previously used by independent raters. A comparison should then be made between all of the raters to determine if a child is demonstrating consistent listening behavior in several different environmental situations. Children who consistently score at the low end of the rating scale should be considered at risk, while those who score at the high end of the scale should be considered less of a risk for hearing loss. Scores for a child which differ across raters should alert an audiologist that different environmental factors may greatly influence the child's behavior that that perhaps a sound suite may not be the best place to test the child. One should remember that multiply handicapped children, especially institutionalized multiply handicapped children, may have poor listening habits.

A child's communication ability is also observed. Most multiply handicapped children do not have good speech skills; however, they may communicate by language boards and/or other symbolic systems. A child's particular communication system is used for audiological testing. That is, a speech reception threshold and word discrimination score may be obtained through the use of words and/or phrases on a child's language board. If a child has limited expressive language and does not use an expressive symbolic system, the child's receptive language ability should be observed. Perhaps the child can point to body parts or clothing, and these responses can be used for speech and audiometric measures. If a child has limited receptive language, the audiological evaluation will probably center on determining the child's localization ability and/or speech detection threshold.

One should observe and recognize physical constraints of a child. Some multiply handicapped children do not have voluntary control of their heads and necks, while others may have only partial control. Lack of control of head and neck movement extremely limits localization testing and forces an audiologist to depend on eye movement to judge localization. Multiply handicapped children with partial head and neck control may be able to localize but may take longer than normal, as would be the case for some children with cerebral palsy. The external physical constraints placed on a child are also important. For example, some children may be restricted to wheelchairs with head-restraining devices. These devices may influence the sound arriving at a child's ear in localization testing. Some children are confined to stretchers and because of skeletal abnormalities may have to lie in such a way that sound reaching one ear is different from sound reaching the other ear.

In summary, the pre-evaluation procedures for severely multiply handicapped children are extremely important. An audiologist should be familiar with a child's diagnosis, medication, medical history, previous test results, auditory behavior, and communication ability. An audiologist should observe a child to determine the physical condition of the child's ears, the child's behavior, and any physical constraints. All of these factors should then be integrated and incorporated in the planning of the audiological evaluation.

## Testing Facilities

Adequate audiological testing facilities are very important for proper assessment. Major concerns are with the test environment and instrumentation. A sound suite should not contain non-essential equipment, and should be large enough to accommodate wheelchair or stretcher patients and an observer. Loudspeaker-to-patient placement is also very important. In some sound suites loudspeakers are placed only 90° apart so that a child's localization response will only be 45° from midline. Such placement is adequate for some multiply handicapped children. However, a much better arrangement is placement of speakers 180° apart so that a correct localization response requires a 90° movement from midline. With this arrangement a localization response will be more visible and the chance of audiologist error will be reduced.

Sound field stimuli should be calibrated using a substitution technique. That is, the output of each loudspeaker should be calibrated to the theoretical midpoint of a child's head. The calibration point must be located in the far field of each loudspeaker. The separation point between a loudspeaker's near and far field can be found by multiplying the diameter of the loudspeaker diaphragm by three. For example, if the diaphragm is 12 inches in diameter, the near field would end and the far field would begin at a distance of 36 inches from the plane of the loudspeaker diaphragm. Speech noise should be used for calibration of speech stimuli. Warble tones and narrow bands of noise should also be calibrated specifically for the sound field. Sound field thresholds should be obtained on at least 10 normal hearing listeners for each speaker. The median threshold for warble tones and narrow bands of noise from 125 to 8000 Hz can then be used as sound-field, normal-hearing threshold values for that particular sound suite.

Instrumentation should consist of a diagnostic audiometer, tape deck, portable audiometer, talk-over system, and an impedance or oto-admittance meter with automatic tympanogram plotting capabilities. A diagnostic audiometer should ideally be a complete two-channel unit with microphone and tape inputs and capability of producing warble tones and narrow bands of noise to each speaker in the sound field. The tape deck should have a two-channel output and pause capability. A portable pure tone air and bone conduction audiometer is also recommended. This audiometer should be located in the sound suite to allow an audiologist to work directly with the child in the test suite when necessary. If an audiologist works with an assistant, a talk-over system is essential to allow the audiologist to talk to the assistant without the child hearing the communication. In this way an audiologist can direct the actions of an assistant and increase the efficiency of testing. An assistant's as well as a child's responses can be monitored by the diagnostic audiometer's talk-back system.

An impedance or oto-admittance meter is also essential. This instrument should contain a stimulus mechanism capable of producing pure tones, broad-band noise, and narrow bands of noise for acoustic reflex testing. Another desirable capabilility is that of ipsilateral acoustic reflex testing. The instrument should also have a compatible plotter so that automatic tympanograms can be obtained.

A wide selection of electronic and manual noisemakers is desirable. Available from several manufacturers are electronic noisemakers that can produce calibrated warble tones, usually centered at 3000 Hz. Manual noisemakers include bells, drums, whistles, tuning forks, etc. Care should be taken with the use of these noisemakers. A spectrum of these noisemakers should be obtained to determine their intensity and frequency characteristics before they are used in testing.

A variety of carefully selected toys should be available to be used for conditioning and test purposes. They should be neither too large nor too small to prevent easy handling by children, and they should not be so interesting that they would detract from the testing. If a child has been using a set of toys for conditioning and testing in the classroom, these toys may be the most suitable.

## Evaluation Procedures

Audiological evaluation procedures for multiply handicapped children should be based primarily on a child's capabilities as determined by the pre-evaluation results and observations. For example, if a multiply handicapped child is non-responsive to sound, the evaluation should start with an attempt to elicit auditory reflexes. If a child is very responsive to sound, the evaluation might start with a Speech Reception Threshold (SRT) or pure-tone audiometry.

When behavioral observation audiometry is employed as the assessment technique, reflexive responses to auditory stimuli and localization ability can be tested employing a variety of electronically generated and/or controlled stimuli. These stimuli might include: (1) noisemakers; (2) live voice (child's name and/or different consonant-vowel syllables); (3) low-pass filtered music; (4) high-pass filtered music; and, (5) warble tones and/or narrow bands of noise.

Several auditory behavior indices have appeared in the literature (e.g., Northern and Downs, 1978, p. 116) and are useful in understanding developmental patterns in auditory behavior, including low level responses by multiply handicapped children. When testing for reflexive responses to auditory stimuli, one might begin by presenting speech at 65 dB HL. A startle response should be observed even in an infant at this level when testing in a sound treated room. If no response is observed, the level may be increased in 20 dB increments. (One should remember that in some cases the absence of a response to sound is not a sure indication of auditory dysfunction.) Reflexive behavior can next be tested with other types of sounds. When one is testing the auditory reflexive behavior of multiply handicapped children, one should consider several factors. Multiply handicapped children, just as normal children, will habituate to repeated stimulation with the same stimulus. Thus, the type of stimulus and intensity level should be varied, and careful observation of the child is mandatory upon initial presentation. Often multiply handicapped children have incomplete development of their auditory systems. For example, I have tested several multiply handicapped children between the chronological ages of 10 to 19 who startled for speech and other stimuli at 65 dB HL but did not even display a rudimentary head turn. These children displayed the auditory behavior expected at an age of 6 months or less. These results agreed with neurological and developmental test results.

Localization testing should be done in combination with testing of reflexive behavior. The loudspeaker-to-patient arrangement should be such that a maximum localization response will be elicited from the child. One visual stimulus which works very well is a mechanical toy encased in a darkened plastic box that lights up when activated. A suprathreshold stimulus, paired with the visual stimulus, should be presented from one loudspeaker and then from the other. Once a child is conditioned to look at the sound source, the visual stimulus serves as reinforcement and is activated only after a localization response has been elicited. Following this procedure, a sound field threshold may possibly be obtained for various stimuli.

Usually localization ability is tested on a horizontal (side-to-side) plane. Because localization ability has a definite maturational sequence, it is also important to test for diagonal plane localization. This can be done by the use of small ceiling mounted loudspeakers. Table 1 shows the maturational sequence of localization ability and corresponding age for a normal hearing child. In general, this table can be used for determining a handicapped child's performance age in reference to normal localization ability. For example, if a multiply handicapped child can localize from side-to-side but cannot localize to sounds from above, the child would be functioning at a performance age of 13-16 months old in reference to auditory localization.

Table 1

Normal Localization Ability as a Function of Age

| Age | Expected Response |
|---|---|
| 4 - 7 mo | Head turn on lateral plane toward sound |
| 7 - 9 mo | Direct localization to side, indirectly below |
| 9 - 13 mo | Direct localization to side and below |
| 13 - 16 mo | Direct localization to side and below, indirectly above |
| 16 - 21 mo | Direct localization to side, below, and above |
| 21 - 24 mo | Direct localization at all angles |

Adapted from Northern and Downs (1978)

If a handicapped child is capable, pure tone thresholds and speech measures can be obtained using conditioned play audiometric techniques, as often is used for normal children. However, the level of the test has to be based on a child's level of functioning. That is, a 7-year-old multiply handicapped child cannot be expected to make a hand-raising response when hearing a tone if he or she behaves like a three-year-old. Play audiometry would be more likely to succeed if the child is tested in a manner similar to a three-year-old.

For these severely handicapped children, an audiologist must use a flexible approach and let the child direct the session but not control it. The audiologist should use familiar toys and conditioning techniques, and, when testing speech, should use familiar words and/or phrases. If a child communicates with a language board or some other symbol system, speech testing may be done with the vocabulary on the language board.

Measurement of eardrum mobility and middle ear function should be done on every multiply handicapped child, especially if pure tones and/or speech stimuli are only used for screening. A higher incidence of middle ear problems is found in the multiply handicapped than with the normal population because of poor self-help skills, cranio-facial abnormalities, and other behavioral and medical problems. A tympanogram can easily be obtained on some children, but it might be very difficult on others. Automatic recording of the tympanogram seems to be the quickest and most accurate method with difficult-to-test children. However, on some very difficult-to-test children, one sometimes needs to change the air pressure in the ear canal at a rate faster than can be recorded automatically and, therefore, must observe the reading on the balance meter and record the results manually.

Acoustic reflex measures should also be obtained on each child by ipsilateral as well as contralateral stimulation. For contralateral stimulation elicitation of the acoustic reflex should be with broad band noise as well as with pure tones for the purpose of determining hearing sensitivity by acoustic reflex thresholds. The contralateral and ipsilateral elicitation of acoustic reflexes provides unique diagnostic information which could be very beneficial in unilateral disorders. With some multiply handicapped children the presence of an acoustic reflex may be very hard to observe. Sometimes these children become restless, grind their teeth, and/or have a great deal of physiological noise. One diagnostic method with the acoustic reflex requires the determination of sensation levels at which reflexes occur. However, on some children sensation levels cannot be determined because a threshold measure for an air conduction stimulus (pure-tone and/or speech) cannot be obtained. Sensitivity prediction by examining the level at which acoustic reflexes occur is effective in some cases. However, this method is not 100% effective and sometimes a major diagnostic error can occur.

Evoked Response Audiometry, by sampling cochlear and/or brain stem responses, seems to hold great promise for assessing the hearing ability of multiply handicapped children. However, more research is needed with this technique with a severely multiply handicapped population. Also, sometimes medical or other reasons prevent the procedure from being used.

## Interpretation of Test Results

A complete battery of audiological tests can be completed on some multiply handicapped children. However, on some children only very limited information can be obtained. Any child displaying signs of a conductive or mixed hearing loss, including impacted cerumen or middle ear pathology, should be referred for otological examination. In addition, any child who is being considered for the use of a hearing aid should be evaluated by an otologist.

The interpretation of results of audiological evaluations of multiply handicapped children has certain limitations, just as for normal children. If the procedure includes only a screening, the question arises as to whether or not an audiologist should be screening for an educationally or a medically significant hearing loss, or for both. Because educational and medical aspects of a hearing loss are not mutually exclusive, a complete hearing screening should include both aspects. That is, if a screening procedure is completed with an emphasis on educational significance, many children with mild but medically significant middle ear problems may pass the screening but later display an educationally significant hearing loss. On the other hand, if a child is screened only for a medically significant hearing loss, many children with educationally significant sensorineural hearing losses may go undetected.

One should always recall that audiological tests involving detection tasks, such as pure tone audiometry and localization tests, only provide information about the level at which the stimulus changed a child's behavior.

If a multiply handicapped child responds at a normal level, the assumption is usually made that the child has normal hearing ability. However, especially with multiply handicapped children this may not be a valid assumption. That is, some multiply handicapped children with normal hearing sensitivity may not have normal hearing ability because they have a central auditory dysfunction. This limitation probably is also true when speech measures are obtained within normal limits. Thus, unless testing is done for central processing, an audiologist must be careful in the interpretation of test results.

Caution should also be observed if test results are limited to sound field testing. That is, sound field testing results do not supply information on how each ear is functioning independently. One ear may be responding differently than the other. To examine this possibility a child's localization responses to a variety of stimuli covering low and high frequencies should be elicited by presenting the stimuli through loudspeakers located at various positions in reference to the child.

Sometimes the only information obtained on a multiply handicapped child is about eardrum mobility and acoustic reflex. For these cases, it is reasonable to try to assess hearing sensitivity by examining the levels at which acoustic reflexes are elicited by various stimuli. Several methods have been advocated in the literature for this purpose (see Northern and Downs, 1978, p. 172-173). These methods have different efficiency rates ranging from only identifying a significant hearing loss (greater than 32 dB) to determining the pure tone threshold. If any of these methods are used, the audiologist has to be thoroughly informed about their limitations and problems with interpretation of results.

For many multiply handicapped children, working hypotheses of their hearing ability must be postulated. That is, all of the audiological results have to be reviewed in reference to a child's level of involvement and pre-evaluation results. Sometimes when all of the information is received, a diagnosis can be made. However, for some multiply handicapped children, diagnoses of hearing ability may only be tentative.

One of the greatest limitations in hearing diagnosis concerns those multiply handicapped children who have very developmentally delayed auditory systems. Initially, such a child may demonstrate a very significant hearing loss and may even be fit with a hearing aid. However, as the child matures the level of perception increases and after a period of time one may find that normal hearing sensitivity is indicated. Such a child is a real dilemma because of a concern that if the child does have normal sensitivity, a hearing aid might cause a hearing loss. On the other hand, if the child truly has a significant hearing loss and is not fit with amplification, he or she may become more socially and educationally retarded.

## Educational Implications

Once a multiply handicapped child has been identified as having a hearing loss and/or a working hypothesis about the child's hearing ability has been postulated, one has to consider the educational implications. The results of the testing should be explained to the parents and teachers. Often parents and teachers have to be educated about hearing impairment and hearing testing. Commonly, multiply handicapped children have to be re-evaluated several times. Thus, suggestions should be made to the teachers and parents concerning modifications of behaviors that should be attempted so that more meaningful hearing test results can be obtained. Also, teachers and parents should be taught how to observe a multiply handicapped child's behavior to sound in relation to his or her developmental capabilities.

If a multiply handicapped child is found to have an auditory dysfunction, one must consider appropriate placement and the availability of additional services. Further suggestions should be made concerning the child's communication therapy in reference to hearing ability. These suggestions and/or recommendations might include preferential treatment for a hearing loss, amplification, and/or alternate therapy techniques.

Many multiply handicapped children with significant hearing losses can benefit from the use of amplification. However, simply recommending a hearing aid with no appropriate associated services may be inappropriate. One way to handle these children is to slowly introduce amplification. Initially this may be done by the use of an auditory training device. After a period of auditory training therapy, a child's response to amplified sound can be observed. Then a hearing aid may slowly be introduced to see if the same behavioral changes with amplification are observed. Throughout this entire process many months of behavioral modification may be needed for the child to wear earphones and/or the hearing aid. Once this has been completed, another period of time will probably elapse in which the child will have to be taught to leave the aid in place. Many multiply handicapped children may never have the capability to wear and take care of a hearing aid independently. Thus, constant monitoring of the use and function of the aid has to be implemented. Also, not every multiply handicapped child with a significant hearing loss can utilize amplification. For these children alternative communication procedures should strongly be considered.

## Audiological Assessment of Multiply Handicapped Children in the Public Schools

Craig Chorney

Upon examining the audiological records of special education classes in public schools, one may often find many children that have ambiguous or incomplete results. School nurses are frequently responsible for implementing audiological screening programs and usually are not able to obtain definitive results on children who are difficult to test. Many retarded children fall into this category, especially trainable and severely or profoundly retarded children. Therefore, a need often exists for a more highly trained person to administer audiological tests to those classes. Most special education agencies do not have the staff available to implement such a program and may have to call upon outside consultants in this area to do the testing.

The following is a description of a procedure used by the Multiply Handicapped Education Project of The Pennsylvania State University and a cooperating special education unit for testing several classes of hard-to-test children. Althought here may be various ways of meeting the audiological assessment needs of this population, this program is presented as one possible model.

## Scheduling and Preparation

Administrative Procedures. All initial visits by the audiologist to schools in the special education unit were scheduled by the project coordinator through a speech and hearing supervisor for the unit. The supervisor contacted the area special education director to determine the particular schools in which services were required. It was then the responsibility of the supervisor to send parent consent forms to the contact person in the school, usually the classroom teacher or the speech therapist. The consent forms described the assessment procedures to be used and gave permission for the audiologist to look at the child's school medical reports, as well as to evaluate the child. No child was to be tested without having a signed consent form.

Selection of the children to be tested was made by the teacher and/or therapist. Any child who had no record of previous hearing screening, or who had failed or had questionable results on a previous screening, was recommended for evaluation. Children were also selected on the basis of suspicion of hearing loss for medical reasons or behavioral characteristics.

Teacher/Therapist Contact Prior to Evaluation. Once the project coordinator and audiologist were notified of the tentative date of the school visit, the audiologist contacted the teacher or therapist in the school to confirm the date and time. At this time information was obtained regarding the number of children to be tested and the degrees of their physical handicaps and cognitive functioning. Evaluation procedures were explained to the teacher and/or therapist, including a description of the test environment needed and a request for any personnel who might be available to assist. Conditioning procedures were also explained so that children who might be slow to respond could be conditioned before the evaluation session.

## Assessment Procedures

Test Environment. A quiet room away from hallway traffic, noisy classrooms, playgrounds, etc., was requested. A setting with as few visual distractions as possible was desirable to maintain the child's concentration on the listening tasks. The setting had to be large enough to accommodate wheelchairs used by some of the children.

After setting up the equipment in the testing area, the audiologist first obtained his own hearing thresholds to assure that the equipment was in proper working order and to serve as a check on the environmental noise level. Ambient noise levels which were high enough to shift the tester's thresholds by more than 25 dB at the low and middle audiometric frequencies might prevent detection of a mild but educationally significant hearing loss, and had to be taken into consideration in making any recommendations.

Personnel, Equipment, and Procedures. Having another person available to assist in the procedures with difficult-to-test children was desirable, although not always necessary. This person could be the teacher or therapist, or a classroom aide with whom the child was familiar. The assistant helped to control children who were behavior problems, looked for facial responses in those who were slow to respond, and dispensed edible reinforcers when they were necessary. Often just having a familiar person in the room was enough to reduce a child's anxiety sufficiently to obtain valid responses. However, the person assisting had to be carefully instructed not to give any inadvertent response cues to the child.

Before doing the test, the audiologist looked at the medical records of each child. Results of previous screenings, otological evaluations, and other pertinent medical and educational information were noted. The teacher or therapist was asked about any specific physical handicaps or behavioral idiosyncrasies which might affect a child's responses, and about any reward or reinforcer that particularly motivated a child.

The first procedure with each child was an otoscopic check. Records were made of whether the eardrums could be clearly seen, of any wax buildup or drainage in the ear canal, of whether myringotomy tubes could be seen, and of any other significant characteristics. This procedure was not intended as a diagnostic examination, but as a preliminary check before performing impedance audiometry.

Impedance audiometry is a routine clinical procedure used to determine the state of the middle ear system. By presenting a tone at a fixed intensity into a sealed ear canal and changing the air pressure in the canal, a physical measurement of the mobility of the eardrum, known as a tympanogram, is obtained. Middle ear muscle reflexes can also be tested by presenting a tone to the same or opposite ear at high intensity.

A portable electroacoustic impedance bridge was used to obtain tympanograms and acoustic reflexes on each child, except when there was a wax buildup in the canal to the extent that the eardrum could not be seen. Eardrum mobility was recorded as normal or poor (indicating the possible presence of fluid in the middle ear). Measurements as to whether or not reflexes were elicited at normal sensation levels were recorded. A third measurement, known as the Physical Volume Test (PVT), was conducted on children in whom myringotomy tubes were observed. The PVT allowed the tester to determine whether the tubes, placed by an otologist in the eardrum for ventilation of the middle ear, were clogged with debris or open.

Pure tone air conduction thresholds were obtained next. This procedure was the most difficult part of the assessment, as it required behavioral responses from each child. A portable audiometer was used to test at frequencies of 500, 1000, 2000, and 4000 Hz. Hearing was also tested at 250 Hz in children who maintained their concentration long enough. The children were conditioned to respond to sounds by dropping a block, stick, or other small toy into a large can when a tone was presented. In most cases they had to be prompted and physically guided through the responses, using high intensity signals, until they were able to respond on their own. Correct responses were rewarded immediately, and the presentation level of the stimulus was lowered until the child no longer responded. Several ascending and descending approaches were used at each frequency to determine the lowest level at which the child responded.

Most of the children responded to the play audiometry tasks very well when rewarded with praise and tactile stimulation. Reinforcement and response modes had to be modified according to each child's behavioral level. Some children maintained excellent responses with minimal praise, while others required constant stimulation to keep their attention. One particular example of the latter was a child whose responses were very inconsistent until the assistant hugged and praised him after each response. They ended up in a continual embrace, with the boy giving valid hand-raising responses to tones down to the room noise level.

Edible reinforcers were not used unless it was evident that a child would not respond for other rewards. The use of edibles tended to produce a higher number of false-positive responses and became time-consuming. For example, one child would respond without hearing the stimulus just to obtain the food, and upon receiving it often kept it in his mouth without swallowing it. Since the child would not be ready to respond again until the food was gone, it was necessary to use small pieces of edibles that dissolved quickly to maintain a steady pace for optimal conditioning. Before dispensing any edibles to a child, however, records were examined for any medical condition, such as diabetes, that might preclude the use of certain foods.

Most of the individual sessions took less than half an hour to complete. If a child could not be conditioned to any play audiometry tasks within that time, his or her responses to speech were noted. The child was observed to determine ability to localize to name and noisemakers, to follow simple commands, and to point to objects. The audiologist gave no visual cues while lowering his voice level from normal conversational loudness down to a whisper.

## Post-assessment Procedures

Teacher/Therapist Conference. The audiologist reviewed the results and recommendations for each child with the teacher or therapist after all the children had been tested. The possible medical, educational, and social significance of any detected hearing losses was explained at that time. The teacher or therapist was again instructed in conditioning procedures for children recommended for retesting. The audiologist suggested that noisemakers such as bells, drums, whistles, etc., be used with shaping of responses. Visual cues and physical prompts were to be gradually eliminated until the child was able to respond to the auditory stimulus alone.

Written Reports. All recommendations were first approved by a certified audiologist supervising the project audiologist. Copies of a letter containing a brief report on the results and recommendations for each child were sent to each of the following: project coordinator, speech and hearing supervisor, special education director, classroom teacher, speech therapist, and school nurse. No recommendations were indicated if: (1) there was not a considerable wax buildup in the ear canal; (2) tympanograms showed normal eardum mobility; (3) acoustic reflexes were elicited at normal sensation levels; and (4) pure tone air conduction thresholds were 25 dB or less. This last criterion was flexible depending on the ambient noise level of the testing area. A child passed the evaluation if the first three criteria were met and valid responses were obtained down to the room noise level.

A child was recommended for a medical examination by a family physician if: (1) there were considerable wax buildup; and/or (2) tympograms indicated poor eardrum mobility. These criteria suggested the presence of a medically significant condition which could result in permanent damage to hearing if left untreated.

A child was recommended to be retested in the school at a later date if: (1) abnormal eardrum mobility was observed; (2) the child did not condition to play audiometry tasks; or (3) pure tone test results were questionable or showed a significant discrepancy between the ears that was not substantiated by acoustic reflex testing.

A child was recommended for a complete audiological evaluation at an audiology clinic if: (1) acoustic reflexes were absent at 500, 1000, and 2000 Hz; and, (2) responses to pure tones indicated a loss greater than 25 dB.

Medical and Audiological Referral Procedures. Medical referrals were to be made by the speech and hearing supervisor through the child's parents. Children were referred to the family physician rather than an otologist to make use of the most easily available medical services with the assumption that the family physician would make any other necessary referrals. It was recommended that medical examination and/or treatment be completed before any retesting was done to ascertain the state of health of the middle ear. Removal of wax from the ear canals was necessary before valid impedance and pure tone testing results could be obtained.

Audiological referrals were made by the speech and hearing supervisor through the parents. Transportation to an audiology clinic was to be arranged independently by the parents or through the supervisor.

Retesting and Follow-Up. The audiologist was responsible to arrange a date and time for retesting of children in the schools. About 5 weeks between visits was preferred. This time would allow conditioning of children, medical referrals to be completed, and transient middle ear disorders to be resolved. The audiologist contacted the teacher or therapist to check about how the above concerns were progressing and to set a date for retesting.

Assessment procedures were the same for retesting as for the initial evaluation: otoscopic check, tympanometry and acoustic reflexes, and play audiometry using pure tones. Recommendations were made according to the previously listed criteria. Medical recommendations which had not been followed up were repeated. If children still had questionable pure tone results or discrepancies between ears, recommendations were made for them to have a complete audiological evaluation at an audiology clinic.

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## CHAPTER 4

# The Use of a Structured Curriculum with Multiply Handicapped, Hearing Impaired Children

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The idea of adapting educational programs to individualized differences, and doing so in a systematic fashion, has been around for a long time (cf., Washburn, 1925). Using a structured curriculum to accomplish this goal also has long been advocated (cf., Rugg, 1927a, 1927b). More recently the concern has been directed toward combining developmental theory (Peters, 1977), societal demands (Neisworth & Madle, 1978), and developmental milestones to provide the content objectives for structured curricula. Considerable funding has provided for the design and dissemination of structured curricula for national programs such as Project Follow Through, Head Start, and The Handicapped Children's Early Education Program. Extensive research has demonstrated the efficacy of structured, developmental curricula over less structured approaches in terms of both short and long term effects (cf., Lazar, Hubbell, Murray, Rosche, and Royce, 1977). The basic argument for structured curricula is that they are *efficient* (Skinner, 1973).

The term "efficiency" is interpreted differently by different people. To some it suggests a production-line dehumanization of education. To others it implies directionality and precision. To still others it primarily means accountability. When we indicate in this chapter that we want to make the education of multiply handicapped, hearing impaired children more efficient, we are emphasizing the following points:

(1) *Having all staff members (and parents) working toward the same developmental goals for the child*. A structured curriclum's clearly specified developmental objectives provide the central focus for all people working with the child.

(2) *Designing an individualized and personalized program for each child*. A structured curriculum permits each child to be entered at an appropriate level, to proceed at an appropriate pace, and to accomplish objectives consistent with his or her own needs and capabilities. It directs the teacher's attention toward the uniqueness of each child.

(3) *The accurate recording of each child's progress or change*. Such monitoring of progress provides: (a) motivation through a sense of accomplishment; (b) recorded achievements to demonstrate accountability; and (c) feedback on successful initiatives and independent efforts.

The structured curricular approach toward the education of multiply handicapped, hearing impaired children is a consistently positive approach, and it is, therefore, the most humane approach. The curricula, such as the Child Based Information System (CBIS) to be discussed later, list the positive behaviors children are to attain. They start from what the child can do, and move forward from there. Because the steps are rather small, and because they are systematic and clear, they show rather immediate effects--positive behavior changes. Because attention is directed toward positive behavior change, undesirable behaviors are less likely to be reinforced and strengthened. As the undesirable behaviors diminish, more attention can be given to the positive development that is occurring.

## Application

The application of this approach results in the identification of various curriculum areas required to meet the overall goals for a child. Each of these curriculum areas must then be broken down into specific objectives in terms of general behavioral responses. To determine if a child is reaching the specific goal, detailed criteria must be enumerated to indicate when the goal is reached. Finally strategies for reaching these specific goals must be developed and implemented.

The principle curriculum areas are related to the various developmental concerns common for any developing child. The particular organization of these curriculum areas varies from curriculum to curriculum, both in commercially developed curricula and those developed by local education agencies. One particular organization is discussed later in this chapter. The general areas should include self-care skills, gross and fine motor skills, sensory training, language and communication skills, reading, mathematics, social skills, vocational training, academic content areas, and general behavioral concerns. These areas must be divided into more specific sub-areas, which we will refer to as "strands".

Within each strand objectives that fall within the specific area are listed. These objectives may be identified from various sources and, as the curriculum is refined, placed in a developmental order as much as possible. Once the base line behavior or ability of the child is identified, sequential progress through the curriculum is followed. In certain areas these objectives will not especially be ordered in such a way that one objective is a prerequisite for a later objective, and some skipping around within a specific strand may be unavoidable.

The objectives themselves should describe a general behavior or ability in terms specific enough that one can have a clear understanding of the skill that is being discussed. The criteria for success, stated in behavioral objective form, can then be determined for the meeting of that objective. These criteria are the immediate objectives of the classroom activities, whereas the general objectives are stated more in their relationship to overall functioning of the child. Sometimes the criteria are also stated within the curriculum in terms only somewhat more specific than the objectives. The teacher must then determine such aspects as the percentage of times or the number of times in a row the behavior must be done successfully for the child to have met the criterion.

The following is an example of these categories in the CBIS curriculum. In the strand entitled "Self-Identification" is an objective entitled "Responds to first name." The criterion states that the child must indicate by gesture or verbal response that he or she knows his or her name. The teacher would have to decide the specific frequency (in this case, probably 100%) which would be considered an indication that the child has met the objective.

When the criterion for success for a certain objective within a strand has been established, a teacher must develop the strategies necessary to assist the child in reaching that criterion. A curriculum used by the teacher may or may not already have stated strategies that can be applied for the specific objective. When a curriculum is in wide use by a special education service unit, a central storage of strategies used by various teachers for the same objective can be an invaluable source for the teacher who is attacking a specific area for the first time.

A centralized storage system for easy location of such strategies should give a brief description of that which a certain teacher has developed to work toward the objective. Other teachers must have some way to access this information. With a structured curriculum the various strands and objectives are coded so that a storage file can be efficiently organized. One of the best ways to provide this bank of information for teachers is to have the strategies stored by computer. If a computer terminal is available to the teacher in his or her facility, the teacher can simply plug into the strategy retrieval system, ask for the strategies related to a specific objective, and within seconds have a print-out of all of the strategies that other teachers have put into storage.

With the basic description of the strategy, teachers should store their names and addresses or telephone numbers so they can be contacted by other teachers if there are questions about their methods for executing the strategies. In this way the sharing of information among those working in the same area is optimized and there is not a lot of wasted time in which teachers re-invent the wheel. One aspect that should be emphasized, however, is that such a sharing must be ingrained into the teaching staff. Some educational staffs may not make use of such information without administrative/supervisory encouragement.

Specific strategies may or may not work with a different child, of course, and very often the teacher must develop new strategies. Once again teachers must be encouraged not only to take from others' experience, but also to share any new development which they have initiated. The teachers must have a fairly simple method of providing input to this central strategy store so that the new strategies that they develop can be easily and quickly made available to others.

One aspect of applying these strategies to specific handicapped children is deciding on the most effective reinforcers and the pattern of reinforcement that will be used. This is perhaps the most individualized aspect of such a structured program. Teachers working with less highly structured curricula are always making decisions as to how to reinforce children for their work, but with this special population a more organized pattern can prove very beneficial. Although a special education child may remain in the same classroom over a period of several years, he or she may have many new teachers, and each teacher has an obligation to record carefully the successful (and unsuccessful) patterns of reinforcement that occur with the child so that teachers who have the child in the future can benefit from this information.

## Adaptations for Multiply Handicapped, Hearing Impaired Children

This particular chapter is primarily a background source for the use of structured curricula with multiply handicapped, hearing impaired children, and providing exact strategies for teaching particular objectives to these children is beyond its scope. However, some specific suggestions will be made in terms of how materials should be adapted for use with children who basically are unable to use their auditory system for receiving information. Then in the next section some specific examples will be given as to how the CBIS curriculum has been used with this population.

One general principle that is especially important for the teacher who may be working with a hearing impaired population for the first time is that the more severely involved a particular child is, especially in terms of retardation, the less difference there usually is between the methods used with the hearing impaired child and the child with normal hearing. Very often one does not really know how well the severely retarded child is processing the auditory signal anyway, and teachers of these children often use methodologies that are very similar to those used by teachers of multiply handicapped, hearing impaired children.

The most obvious adaptation that is often made for children with hearing losses is that of communication mode. If the child has the capacity to receive language and communication but not through the auditory system, one must present the information either by a visual system, or in the case of deaf-blind children, through a tactile system. For many hearing impaired children, however, the auditory system with the aid of amplification can be an effective channel either for primary input or supplementary information. The issue of communication mode is discussed in detail in Chapter 5.

The most often observed deficiency in the development of hearing impaired children is in language skills. The specific difficulties that deaf children have with English are described in detail by Kretschmer and Kretschmer (1978, Chapter 4). Many of these same difficulties may be found in children with other developmental problems, and of course, language skills may be very rudimentary with more severely retarded children. When working with higher functioning children that have a hearing loss, however, a teacher must be aware of particular weaknesses that typically exist in the deaf population so that appropriate adaptation of curriculum materials can be made. With certain materials those language constructions that may be especially problematic should be avoided. If attacking the area of language development per se, the teacher may draw upon general intervention strategies used with hearing impaired children (see Kretschmer and Kretschmer, 1978, Chapter 6).

The influence of deafness on the general cognitive development of the child is another area with which the teacher of multiply handicapped, hearing impaired children should be familiar. A summary of these deficiencies and references of research about them can be found in Liben's (1978) chapter on experiential deficiencies in deaf children. Again two aspects of these cognitive problems are important. When teaching basic, practical skills to multiply handicapped, hearing impaired children, a teacher should avoid strategies that may attack the weakest aspect of the child's cognitive ability. On the other hand, teachers should be aware of these problems so that their teaching can contribute to overcoming them.

One common problem among handicapped children is the inability to attend to the task at hand. Hearing impaired children may be especially weak in this area, especially when visual distractions are present. If a child has normal hearing, an auditory cue (e.g., the child's name spoken emphatically) may often serve to bring the child's attention back to a task. The teacher must find other means of directing the deaf student's attention to a task and may often have to control the classroom environment to reduce visual distractions. Although the teacher may wish to have a classroom that has many stimulating visual stimuli, these may have to be at a minimum to better structure the multiply handicapped, hearing impaired child's attention.

Auditory training is an area that is of particular importance to the hearing impaired child. Although lack of attention to auditory stimuli may be a problem with many severely involved children, the child with a peripheral hearing loss obviously has additional difficulty in this area. Although many children may never be able to use their residual hearing as their primary mode for communication (see Chapter 5), they may make valuable use of it with proper training.

To optimize the use of residual hearing by a hearing impaired child, a teacher must understand the basic principles about sound, the hearing mechanism, and use of amplification. In addition the teacher must be aware of specific strategies that are used with other hearing impaired children to implement auditory training. Two of the better resources for auditory management and training are Ross and Giolas (1978) and Sanders (1971).

The last area of concern to be discussed here is that which too often is the only concern of teachers when adapting curriculum materials for use with hearing impaired children. For any material that is basically verbal in nature (that is, necessitates language skills) or that requires verbal directions, a teacher generally needs to put the verbal material into a visual form for the hearing impaired child, usually by using sign language and/or a language board. Although this approach may often be the only real adaptation of materials that is needed, one must incorporate it in the framework of the other concerns already discussed here.

As an example of the application of a structured curriculum for teaching multiply handicapped, hearing impaired children, the following description of the Child Based Information System is given. This particular curriculum was used by the primary special education agency cooperating with the Multiply Handicapped Education Project.

## The Child Based Information System

The Child Based Information System (CBIS) is an instructional program for special education classes which utilizes a computer for planning and monitoring progress. The program includes accessibility to a teacher-constructed strategy file and provisions for quarterly assessment of each child's program as designed from CBIS. The foundation for CBIS is a curriculum guide of sequential instructional strands and objectives for special classes. This guide was created by the professional staff within Central Susquehanna Intermediate Unit 16, Lewisburg, Pennsylvania. The strands and objectives undergo annual review and are revised as necesssary.

CBIS was designed for children with a wide range and degree of handicaps. It is basically developmental in its approach, which is particularly important for a curriculum guide for hearing impaired, multiply handicapped children. CBIS has been very successful in providing assistance in a wide range of areas dealing with these children (Peters, Note 1). A skilled, creative teacher can make profitable use of any new information, guide, or material in working with mentally retarded or hearing impaired children. However, many professionals experience great frustration when they first begin their attempts at identifying the content and methods used with multiply handicapped children. This is especially true because academic training institutions have just begun to prepare students to teach multiply handicapped children.

This handbook includes an annotated bibliography with some curriculum guides and materials that are available commercially. In choosing curricula, one should consider those that have a wide range of functional levels, including remedial suggestions available for all possible combination of handicaps. No matter what curriculum guide is used, there are certain steps that should be followed in designing an educational program. These steps are not specific to multiply handicapped, hearing impaired children. They come from any areas of special education. As a result of the experience of the professional staff of this project, the following curriculum areas have been determined as especially important for programming for multiply handicapped hearing impaired children and youths:

Feeding/Eating
Drinking
Fine Motor
Sensory Awareness
Auditory Training
Receptive Language
Expressive Language
Patterned Language
Self Identification
Visual Perceptual Motor
Readiness Skills

This does not mean other skills (perhaps higher level) should not be considered. These are simply those areas which we have found generally necessary to consider when programming for the range of children that we have served (see Chapter 1).

Within CBIS, the teacher designs each child's program by establishing a base line of performance and by keeping in mind three key questions:

(1) Will the child ever use a particular skill?

(2) Can the child already do it?

(3) Is the child ready now?

The following is an illustration of the typical procedures in programming a strand for a multiply handicapped, hearing impaired child.

| | |
|---|---|
| Strand (12): | Receptive Language |
| Objective (01): | Responds to sudden sound by moving. |
| Criterion: | Attends to any sound source |

In the case of severely physically handicapped student, one must consider the type of response that the child is capable of making. This may be determined through experimentation. For example, the student may be capable of turning toward the sound or only capable of an eye blink. Decide the correct response and reinforce it socially and with that particular child's strongest motivator using a 100 percent reinforcement schedule. Depending upon the individual child, the teacher will set up the correct number of responses needed to reach criterion.

The selection of a reinforcer may take some time. Having several reinforcers from which to choose is always nice, but not always possible. The use of any reinforcer must be done with care and exactness. One must not eliminate the possibility of making temporary use of a reinforcer that might be considered a negative behavior. Allowing a child to engage in an activity that one wishes eventually to extinguish may be the only way the child can be motivated at the present time.

Returning to Receptive Language, one should move quickly to:

| | |
|---|---|
| Objective (03): | Changes focus when speaker (sound sources) change. |
| Criterion: | Attends to new speaker (new sound source), not necessarily speech yet. |

With some students one may be able to get this change right away; with others it may have to be taught or shaped. It is imperative to continue to use effective reinforcement, even if only social reinforcement, during all educational activities, but especially on the lower levels of the strands, like those now being discussed.

The child who needs to be taught to change focus must be given very simple chances at success. This objective may have to be broken down by a task analysis of the various components. An example of this might be the following:

(1) looks in direction of sound when sound is in front of child and paired with food reinforcer;

(2) move sound very slightly and pair it with food reinforcer;

(3) move paired items again slightly;

(4) attempt to separate paired items:

  (a) move on to step 5 if successful;

  (b) if not successful, continue step 3 with slight additional movement and go back to step 4 when child is ready. Otherwise continue with the same procedure gradually separating sound and reinforcer. Inquire into audition of sound and possible problem for inability to respond when sound and reinforcer are separated.

(5) produce sound so that student cannot use vision as cue to sound (e.g., through speakers).

If speech was not used as the sound source, move on to substitute speech for the proceeding objectives, leading to:

| | |
|---|---|
| Objective (04): | Responds to speech. |
| Criteria: | With facial or body gestures. |

Any overt response should be accepted at first--facial and body gestures are a more appropriate language transmission, and therefore more desirable. When speech is the sound source, hearing levels of the child will be more significant in determining success. The skills are moving from gross to fine discrimination.

The following is more of a mid-level skill:

| | |
|---|---|
| Strand 12: | Receptive Language |
| Objective (14): | Identifies Objects |
| Criterion: | By pointing to or retrieving at least 20 objects. |

This objective may require a long time to achieve. The student may labor over each object as if it were the first learned and may start forgetting the first few after several have been taught. Some students may move along once the concept of the skill is understood. As with all objectives from any curriculum, the best teaching strategy is to use the familiar and that which is highly motivating. For example, if a toy truck is exciting to a child it would only be sensible to start with that object. If the teacher needs to be more basic, he or she should start with people with whom the child is more familiar, that the concept of "Johnny, show me______," can be grasped. Another consideration is that the child may not be able to cope with the discrimination aspect of the task. The child may only be able to cope with retrieving or pointing to one or to several objects for a while. The true test of the objective, however, would be selection.

Proceeding with this particular strand, the next objective would be:

Objective 15: Places Object
Criterion: In location when requested

This objective might be started before the criterion of 20 objects in Objective 14 is met. If the student can locate an object on command, identification skills are being demonstrated as well. Remember that it is not necessary to complete every objective within a strand or to complete various objectives in order.

An example of a higher level skill would be:

Strand 12: Receptive Language
Objective 23: Responds to complex commands
Criterion: Containing two or more stages

The teacher is already having the child respond to some simple commands in directing him or her to place an object. The easiest start would be to combine two of the objects the child knows in one direction. For example, "Johnny, put the car and ball on the table." The child takes the car and ball out of the teacher's hand and places them on the table. One should advance to a two-stage command, "Put the car on the table and the ball on the chair," as soon as possible. The child may have a poor auditory memory span, forget the car, but place the ball correctly.

If this is the case, present the direction in two parts such as, "Johnny put the car on the table, put the ball on the table." If this is still too complicated, one should pause between the two statements, allowing the child to complete the first part just before presenting the second part. Then reinforce the child after the two parts are completed. Proceed in this manner until the child seems ready for the more complex command again. The two objects may need to be meshed within the one command more subtly yet. If poor auditory memory persists, it is advisable to work on that skill more directly before complex commands. The teacher must always be aware of possible alternative problems that prevent success in skill areas. In addition, there must be a lot of overlapping to conduct efficient programming. It is the teacher's responsibility to become familiar with the curriculum to allow the overlapping to occur.

These have been just a few brief examples of the use of a structured curriculum to work toward certain skills with multiply handicapped, hearing impaired children. Once again we should emphasize that as the above procedure is followed, care should be taken to record all pertinent data. Only with this careful documentation can progress be accurately measured, shared with others working with the child, and used to develop future planning of goals for the child.

## Conclusion

The use of a structured curriculum is not an impersonal manner of programming a multiply handicapped, hearing impaired child through an educational process. Instead it allows for accurate individualization and consistency in the child's program. It permits the educational personnel to document the small steps of progress made by the severely or multiply handicapped child. Positive behaviors are more easily reinforced and negative behaviors extinguished. Through the careful documentation required in a structured curriculum, educators are able to demonstrate the success of their efforts with these special children. Such a curriculum is an effective framework for the development of specific educational goals and the strategies with which to reach those goals.

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# CHAPTER 5

## Selection of Appropriate Communication Modes for Multiply Handicapped, Hearing Impaired Children

Richard C. Nowell

### Introduction

Professionals involved in the field of education of hearing impaired children are acutely aware of the controversy surrounding communication modes that has existed as long as any organized attempt to educate deaf children. This issue will not be discussed in detail in this chapter, but a basic characteristic is that it centers around whether educators should incorporate some form of manual/visual communication mode in educational programs for deaf children or use only an oral/aural means of communication.

In recent years there has been a strong swing toward "Total Communication". Although the term actually refers to an educational philosophy of assessing each individual child to select an appropriate communication mode, Total Communication usually indicates that some form of sign language is used in a program. Not only has sign language become more commonly used in educational programs for the hearing impaired, but also many educational programs for the mentally retarded have incorporated it into their methodology. Retarded children, especially those at the trainable to severe or profound level who have shown great difficulty in the development of language through an oral/aural mode, or who have not been successful in developing speech, are now often taught sign language.

This brief reference to the communication mode controversy does not adequately convey the complicated issues involved nor the degree to which it has been a devisive force in the education of hearing impaired children. There are many discussions about this controversy in the literature, and the reader is referred to Moores (1978, p. 15-18) for a concise summary.

When professionals are involved with more severely handicapped children--including many multiply handicapped, hearing impaired children--the issue does not seem to be nearly as controversial. Perhaps because a prognosis for development which closely approaches normalcy is so rare, the introduction of a "non-normal" communication mode is not often seen as problematic. The purpose of this chapter is not to discuss the controversy itself but to suggest some guidelines for decision-making about communication modes to be used with multiply handicapped, hearing impaired children.

The assumption here will be that the professional working with these children will not ask the question, "Can this child use the form of communication that I prefer to use?" Instead he or she will ask, "Considering all of the evidence I have, what is the best communication mode for this particular child?" The communication mode must not become an end in itself. One's goal for the development of a particular communication mode must be a sub-goal for the general development of communication and language skills that are necessary for the optimal intellectual, emotional, and social development of a child.

There are many combinations of communication modes that can be used in an educational program. In fact, almost every program uses more than one mode. However, we will focus our discussion on that which might be called the primary mode of communication for the child. The three modes that will be central in our discussion will be the following: (1) oral/aural; (2) sign language; and, (3) language boards.

Although most people in the field of education of the hearing impaired are familiar with these communication modes and the methods they entail, a brief description of them is given here. For more information, there is an excellent description of oral/aural and sign language in Northern and Downs (1978, p. 262-274). Chapter 6 discusses language boards in detail.

Oral/aural refers to the mode of communication which most closely resembles that used by non-handicapped individuals. Most of our interpersonal communication which uses language as a medium puts that language into a speech format. We speak and we hear what others say to us. With hearing impaired children, there are two primary forms of the oral/aural method. The first, often simply referred to as the oral method, encourages the use of speechreading (lipreading) in addition to the use of residual hearing. The other form is often called the aural or auditory method and discourages the use of any visual cues including speechreading. The child is required to receive language only through the sense of hearing, usually amplified by of a hearing aid or auditory trainer.

Sign language is used here as a general term to describe what might more properly be called manual communication, that is, the representation of language visually on the hands and the rest of the body. There are many forms of sign language. Fingerspelling is the representation of the letters of the alphabet on the hand. American Sign Language is a unique language with a syntax of its own and is used by most deaf adults in the United States and Canada. Although there are many other varieties and sub-varieties of sign language, probably the best comprehensive label for the sign language used in educational settings is Signed English (often called Siglish). Signed English is a representation of English through the manual production of signs.

One form of communication that is conspicuous in its absence from this discussion is that of the written word and its receptive equivalent, reading. For those children who develop useful language skills and the ability to read and write, graphic communication certainly may be incorporated into their program. The assumption made here is that graphic communication can be a supplement to any of these other modes. Therefore, no separate discussion of reading and writing will be presented.

One complicating factor in deciding about proper communication modes is that a child may need to use a different communication mode for expressive and receptive language. For example, a child who is able to understand speech, with or without amplification, but who has extremely poor control of speech mechanisms, may be able to use the oral/aural mode for receptive language but may have to use an alternative mode for expressive language.

## Basic Considerations

One general principle that should be considered in choosing the appropriate communication mode is that the selected mode should allow the optimal quantity and quality of communication. A child must have successful communication experiences in various situations, communication that is personally rewarding and not that just fulfills some philisophical position of his or her teacher. The task of communication should be made as easy as possible so that it is not onerous for the child. A communication mode that can be used easily and with as many people as possible provides rewarding communication experiences and facilitates intellectual, social, and personal growth.

A second general principle in this decision-making process is that one should try any communication mode that has potential to work for the child. A teacher should avoid making a snap judgment about the child's inability to benefit from a particular mode. Of course, after carefully evaluating the child on the basis of specific criteria such as are presented later in this chapter, one can make a logical decision. But if there is any possibility that a particular mode, used as either a primary or a supplementary mode, may benefit a child, it should be tried.

Professionals working with multiply handicapped, hearing impaired children must not, however, assume that the choice of the right communication mode will be a panacea. Many teachers who arrive at the decision that some alternative communication mode is better than the present mode expect sudden miracles. Although the communication mode may prove to be a crucial factor in the child's education, it does not automatically solve the child's problems. Severe learning problems, behavior problems, and lack of response to surrounding stimulation, which are common among the severely handicapped, often improve little if any when one adopts a new communication mode--even if the switch to the new mode was the proper decision. One must realize that the communication mode is not the whole solution.

## Specific Considerations: Child Characteristics

The following is a discussion of some more specific considerations about children that influence the decision about communication mode. This is not meant to be an exhaustive list of considerations, nor a step-by-step flowchart. Some plans have been developed (e.g., Shane, Note 1; Lincoln Intermediate Unit 12, Note 2) which attempt to provide details according to specific characteristics and capabilities that will help the teacher to make a definite decision about communication mode. These plans are based upon principles similar to the following. The reader is encouraged to adopt one of these plans--or to develop his or her own--as the practical application of the content of this chapter.

### Use of Peripheral Hearing.

When assessing the capabilities of multiply handicapped, hearing impaired children for the use of various communication modes, one should always consider the extent to which they can use their sense of hearing. The many advantages that are inherent in the auditory channel should be tapped if possible. Even if another visually oriented mode is chosen as the primary mode of communication, peripheral hearing should be considered as a supplementary mode. Accurate evaluation of a child's hearing and proper amplification are important steps in optimizing the use of hearing. Chapter 3 has discussed this area in detail.

On the other hand, some extenuating variables may render the auditory channel of little or no use in communication, especially with the severely involved child. As mentioned in Chapter 3, the existence of pure tone thresholds that indicate a usable level of hearing in a child, either with or without amplification, is no guarantee that the auditory message relayed from the inner ear is either carried to the cortex properly or interpreted accurately upon reaching the cortex. If the peripheral loss is such that amplification is indicated, one must consider whether the child will tolerate a hearing aid. Also, one must compare the possible benefit of a hearing aid with the effort required for accurate audiological assessment, fitting of an aid, and caring for the instrument or teaching the child to care for the instrument.

Many multiply handicapped children that probably could benefit from use of the auditory channel, especially with amplification, do not have this channel emphasized enough (cf., Siegenthaler, Tardibudno, and Saladie, Note 3). However, for many others, either characteristics of children's auditory processing systems or extenuating circumstances prevent this channel from being the primary mode, and sometimes even a secondary mode, through which communication can take place.

Physical Limitations. The physical limitations of a child should play an important role in determining the child's communication mode, especially for expressive communication. An example was given previously of the inability of a child who has no control of speech mechanisms to use oral communication for expressive purposes. However, physical limitations can also be contraindicative of the use of sign language. On the other hand, if the only other alternative is a language board, the issue may be whether poorly made signs are any worse for the child than awkward use of a board. There are innovative means of adapting language boards for the physically handicapped (see Chapter 6), but some of these adaptations may either lack the spontaneity of sign language or require equipment that is prohibitive in terms of cost.

Central Processing of Sensory Input. The type of involvement that exists in the brain stem and/or cortex of a multiply handicapped child is usually extremely elusive. A child may have either a visual or auditory central processing difficulty--or both. Although the overt symptoms of these difficulties may be subtle, the nature of processing difficulty may be crucial in deciding about an optimal communication mode.

The oral/aural mode may be rejected when communication development does not progress to the extent expected from residual hearing capabilities. However, with the gain in popularity of sign language, teachers may adopt signs without considering that the child may have a central processing difficulty that will interfere with the decoding of a visual form of language and/or with the physical encoding into the manually produced symbol. If such visual and/or manual processing difficulties exist, they may result in failure when turning to signs. The auditory processing ability of the child may in fact be more intact than these others, and the oral/aural mode might be indicated.

Peripheral Visual Difficulties. Naturally if the multiply handicapped, hearing impaired child has a peripheral visual problem, this difficulty must be taken into account when deciding on the communication mode. The first reaction to a peripheral visual problem is that one should probably depend more on the auditory ability of the child and turn to an oral/aural mode of communication. However, when the auditory channel is not sufficient as a primary channel, the oral/aural mode may have to be rejected and one of the other two modes considered.

For the child who has a severe auditory processing problem, either peripheral or central, and a severe vision problem, adaptations of a sign system or a language board system are necessary. In our particular project, education of the deaf-blind was not a primary emphasis, as it has been recently in many programs. The reader is referred to various references in the bibliography for information about this area. In the last few years there has been an increase in efforts to improve the education of the deaf-blind, and many resources are available for detailed planning for this population.

A peripheral visual problem, however, is not usually the deciding factor between siging and language boards. Both modes can be used with children with visual problems. Chapter 6 discusses some of these adaptations with language boards. With sign language the primary adaptation is that the child must receive signs through placement of his or her hands on the signer's hands. Again, the reader is referred to the bibliography for more details.

## The Child's Environment: Practical Considerations

One cannot examine a child in isolation to make a decision about communication modes. A child's environment is a strong influence on this decision, and in many cases can be the deciding factor. Professionals working with multiply handicapped, hearing impaired children know that it is nice to talk about the optimal situation or ideal conditions, but often practical considerations have much more influence on decisions about the child's program.

Significant Others. The child does not communicate only with educational personnel, of course, and the influence on the child's communication patterns with significant others in his or her life must be considered. Two issues involving parents, siblings, other caretakers, and any other significant people in the child's life are consistency and ease of use. Will whatever method of communication that is selected as the primary mode for the child be applied in a consistent manner by others? If signs are used with the child, will the same signs be used by all? Will they learn signs at all? If a language board is used in school, will parents use the board at home? Is the nature of the board so complicated that no one but the educational personnel can really use it efficiently?

The oral/aural mode is obviously the most flexible when considering other people. Usually it is the mode of communication used by others in their everyday life, and even when adaptations must be made, little difficulty is encountered by one trying to apply this mode. Because the oral/aural mode cannot be successful for many children, however, the question is which of the other two methods is more likely to be used by others. The issue may actually be one of training. That is, one of the other methods cannot actually be used in the child's everyday life without training significant others to use it.

Language boards in general are not difficult for others to use. When children's language levels are so advanced that language boards are very complicated, one may even design different boards to use in different situations to facilitate communication with others in settings less structured than the classroom.

Sign language, on the other hand, is as difficult to learn as most other languages. However, especially with the retarded deaf, the working vocabulary of the child may be such that it is not prohibitive for parents and others to learn. The variations in signs that exist from one region to another, and often from one signer to another, may cause difficulty for a handicapped child. Although these variations are little more than a regional accent for the deaf person fluent in signs, they may be problematic for multiply handicapped children or others who are learning signs to be able to communicate with them.

Long Term Goals. Sometimes professionals who work with special children are caught up in their present efforts without considering the long term goals for a child. When deciding the most appropriate communication mode, one question that must be asked is where will this person be upon completion of the educational program. The communication mode that is selected must be one that can be used in the future environment, whether a sheltered workshop, a group home or other residential situation, or an independent home in the community. Once again, the oral/aural mode has the most flexibility, but in deciding between a language board and signs, one must consider that which can be used by future professionals and significant others in the grown child's life.

## Summary of Description of Modes

Before some specific examples of decisions about communication modes with some children in the Multiply Handicapped Education Project are given, a few words of summary of the advantages and disadvantages of the three modes will be presented.

Oral/Aural. The oral/aural mode has the distinct advantage of being a mode that almost all of the other people in the child's life can use with ease and without training. Although some adaptations, such as the manner in which to speak to a person with a hearing impairment, may be necessary, these are relatively minor and usually not problematic for parents and others. However, the auditory channel is often not very effective for multiply handicapped, hearing impaired children, even with amplification. Central auditory processing difficulties, although not easily identified, are suspected with many severely involved, handicapped children and may rule out the oral/aural mode. The physical involvement of many handicapped children may prohibit the fine motor control necessary for production of intelligible speech. Even though a child may be able to receive the spoken word, he or she may not be able to use the oral production mode successfully.

Sign Language. Sign language is generally an easier mode for hearing impaired children to use. When only a distorted auditory signal is available, the visual symbolism of signs may be much more advantageous for a child. Even those children who have usable residual hearing may find signs much more reinforcing in communication situations than the oral/aural mode. The greater the degree of retardation and other handicapping conditions, the more likely sign is to work better than the oral/aural mode. Whether the reason for success of sign language is a more intact visual processing system or the demand for attention that it requires, many multiply handicapped, hearing impaired children succeed well with this mode.

Sign language must be learned as a second language, however, by almost all of those working with the child. Even if the professional staff is fluent in signs, to maintain consistency in the communication patterns of the child, signs must be taught to significant others. If the child's vocabulary is limited, teaching the signs may not be difficult, however. Parents are usually the most difficult link in providing the child with a consistent exposure to signs. Some organized program for teaching signs to parents and others working with the child must be developed if this mode is to be used effectively.

Although the previous problems are certainly important, sign language is often the best mode for the multiply handicapped, hearing impaired child. It allows a degree of fluency that does not occur with language boards, and it often offers much more success than the oral/aural mode for these children. One should be careful not to depend on signs for the solution to all the child's problems, however. As was previously mentioned, many people have the tendency to think of the communication system as a panacea, and this attitude seems to be most common with those who have adopted sign language for their program for the first time.

Language Boards. Chapter 6 discusses language boards in detail. All that will be said here is that of the three modes discussed, language boards is the mode most likely to be unfamiliar to many professionals. Despite their gain in popularity, language boards are not as widely accepted as signs. Many people have no idea of how to develop and use a language board. Perhaps the following chapter will alleviate this problem to an extent. There are as well many other sources that the reader can turn to for information about boards.

One of the advantages of language boards is that they can be used with almost any child. Adaptations can be made for extremely physically disabled children and visually impaired children. The level of the board can vary depending upon the ability of the individual child.

Language boards are not the optimal means of spontaneous communication, however. The board cannot be in the child's hands at all times, and therefore if the child wishes to communicate, he or she must return to the board or bring the board to the prospective receiver of the communication. Even children who are confined to wheelchairs and have a board in front of them almost always are out of the chair at times. During those times they are without their communication channel.

Language boards are easy to use, and even boards with a rather complicated matrix system or electronic controls can be mastered without great difficulty by almost anyone who is working with the child. Language boards also seem to provide the structure for handling language that is required by many children.

## Summary

From this discussion one may see a typical pattern of consideration. The oral/aural mode has great advantages for spontaneity and flexibility, for a child who can use it successfully. It requires little effort in application. Sign language also provides spontaneity but is often difficult for parents and many professionals to learn. Language boards are more restrictive to the communication situation but can be used by almost any child and are often highly successful when the other two modes have failed. For many children a combination of two or all of these modes will be most appropriate. One mode may also be more successful at a particular time in the child's development. A child at a different stage may move on to a different mode of communication, and may even use two or all three of these modes rather successfully.

The teacher must objectively evaluate a child to decide on an optimal communication mode. Any mode that has potential to help a child should be tried. Practical considerations concerning the child's present and future environment must be made. Finally, one must remember that no mode will succeed for the child if it is not used properly. All people interacting with a child must know how to use the mode effectively and in a manner consistent with each other.

## Examples

The following are some brief case histories concerning communication modes used with children in the Multiply Handicapped Education Project. More detailed descriptions of some adaptations of language boards are given in Chapter 6.

Child N. was thought to have a severe to profound hearing loss and some degree of retardation at the age of two. By the age of four she had begun to respond to sound enough to be fit with a hearing aid, although she still had virtually no communication. By the age of eight she was responding well enough to audiological testing that one ear was found to have only a moderate loss. About this time she was placed in a residential school for the deaf and began rapidly developing communication through signs. Her retardation appeared to be at the educable level. Upon returning to a day setting near her home, N. was given auditory and speech training and began communicating well with an oral/aural mode. At sixteen she now receives spoken language through amplification and speechreading and can speak fairly intelligibly.

Child E. is a profoundly deaf, trainable retarded child who was placed in a residential institution for the mentally retarded at the age of eight. Raised by his mother and grandparents, he had minimal communication skills through gestures and exhibited severe behavior problems. Pictures and letters were introduced to stimulate communication motivation, and then sign language training was begun. Within a year E. was signing spontaneously and creating original sentences.

Child J. is a trainable retarded girl with cerebral palsy. Although audiological testing now indicates no significant hearing loss, J. cannot speak because of motoric involvement. Sign language was introduced to her, but many adaptations were necessary because of poor motor control. A language board was then developed and she was able to communicate fairly well when prompted to use the board. Now placed in a trainable retarded class, J. expresses herself through both a language board and signing, and can understand speech and signing.

Child B. is a trainable retarded, profoundly deaf teen-ager who for many years had only crude gestures as a communication mode. Sign language was introduced and he was able to improve his communication somewhat, but mostly in the area of receptive skills. B. refused to initiate conversations with signs. Prospects for training the family to sign were very poor. Therefore a switch was made to a language board. In a structured communication situation, B. learned to indicate fairly complete ideas through the use of a language board. Once again, however, spontaneous communication beyond smiling and nodding was almost non-existent. B. continues to have minimal communication through a combination of signs and a language board at school and through gestures at home.

Child P. is a severely retarded, severely hearing impaired teenager. Although much residual hearing is present, P. has never developed more than a couple of intelligible words. Signs were introduced and a few very concrete signs are both received and initiated by P. A simple language board format was introduced to P., also, and again limited success has been seen. He depends primarily on the language board and gestures now for communication.

Child S. is a severely retarded teenage girl who exhibits very little response to auditory stimulation. She exhibits autistic-like behavior and does not attend well to attempts by others to communicate with her. A language board was introduced to her and she now can communicate simple wishes through two-word phrases represented by symbols on her board.

## Conclusion

An attempt has been made to provide a general outline of principles behind selecting the optimal communication mode for a multiply handicapped, hearing impaired child. For more details of this process, the reader is referred to references previously mentioned. For more background and further details as to these communication modes the reader is referred to Schiefelbusch (1980) and Lloyd (1976).

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## Chapter 6

# The Use of Language Boards with Multiply Handicapped, Hearing Impaired Children

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Although similar efforts to use non-verbal communication devices have been used for many years on an informal basis, only in the last fifteen years has there been a documented history of efforts to use language boards as a means of communication. (The terms "language board" and "communication board" are both commonly used for the devices described in this chapter. We use the former simply because it seems to be the most common term.) Haig Kafafian's Cybercom systems appeared in the late 1960's. Language boards then appeared as a means of using Blissymbolics in the early 1970's. Both systems were developed mainly to aid non-speaking physically handicapped people. Then in cooperative efforts with speech professionals, commerical companies began producing electronic devices to be used by the non-speaking populace.

In 1974-1975 dissemination efforts for non-verbal communication techniques were led by the Trace Center at the University of Wisconsin. A national workshop was held at the Trace Center in 1975 on non-vocal communication techniques and aids, and an expanded version of the proceedings was published shortly thereafter (Vanderheiden & Grilley, 1976). Commercially marketed mechanical and electronic aids increased greatly in number, and speech, language, and hearing professionals continued the development and use of home-made non-vocal communication techniques. (Many of these can be found in the Resource Book issued by the Trace Center; Vanderheiden, 1978.) One of the target populations for these devices was that of multiply handicapped, hearing impaired individuals.

## General Description

A language board is a physical mechanism used to indicate or transmit the elements of a message with a symbol system or vocabulary containing rules or procedures that can be understood both by the sender and the receiver. The actual format of these devices ranges from simple selection boards to matrix boards and electronic devices. A board may consist of photographs mounted on tagboard and covered with clear plastic, with simple pointing communication required to convey a complete idea represented by the photograph. Complex encoding is required with matrix systems with which the communicator indicates the desired word, symbol, or other representation by designating locators (e.g., column a, row 2). Electronic devices often scan automatically through the various selections until the communicator stops the scanning signal on the desired communication location. The range of possible formats is limited only by available ingenuity and money.

Various aspects that should be considered in deciding to use a language board with a child have been discussed in Chapter 5. If a language board seems to be appropriate either as the primary or supplementary communication mode for a child, certain readiness skills have to be present or developed. The following is a very brief introduction to some of the necessary skills. Woolman (1980) provides a more detailed discussion of readiness skills.

A child naturally must indicate response to external stimulation before any communication is possible. Response to auditory stimulation can be very useful in directing the child's use of a board, but it is not necessary. However, the child must readily respond to either visual or tactual stimulation. The usual sensory channel for the use of a language board is vision, and although the visually handicapped can use boards through their sense of touch, we will concentrate our discussion on the use of visual stimuli.

One other basic response that must be present in a child before such a system can be used for communication is a positive reaction to reward or reinforcement. Although we take this type of response for granted with higher functioning children, for very low functioning children who must have almost every step of learning carefully shaped, this reponse must be carefully examined. The use of reinforcers in a structured educational program has been discussed in Chapter 4.

A child who is capable of responding to visual stimuli and responds well to positive reinforcement also must be able to visually attend to a stimulus. For the low functioning child, this attention to a stimulus or to a task may have to be developed with a slow step-by-step method, gradually increasing the time parameters. To foster the task as a positive communication situation, eye contact with the teacher should also be an aspect of training in visual attention. As the time that a child can attend to a visual task increases, the teacher can move on to specific stimuli on some form of language board. Unless these basic skills are present, the use of a language board is contraindicated.

A passing word should be said about the types of responses a child makes. The general child-initiated response in a communication situation is to point to stimuli on the language board. For some children this may be very difficult, and many adaptations can be made. The reader is referred to the sources from the Trace Center previously mentioned for details on response modes. Later some special adaptations will be discussed.

Once a child has the basic ability to attend to a visual task, higher levels of skills should be developed that are oriented to the eventual use of a language board. Discrimination among basic attributes such as color, size, and shape is one area that can receive attention at the same time that more practical and meaningful discrimination skills are emphasized. While developing more abstract ability by using objects that differ in one of these attributes, such stimuli as photographs or familiar people offer the child the opportunity to learn to match stimuli that are the same.

As discrimination ability and the generalization of discrimination to matching skills develops, more abstract stimuli should be used. The most basic level of abstraction would be a photograph of a person or object with which the child is familiar. After this level of abstraction is mastered, more complex levels of abstraction can be used.

One should not overestimate the child's ability to begin generalizing discrimination ability to different levels of representation. Multiply handicapped, hearing impaired children often have difficulties generalizing many learning experiences, and the combination of detailed perceptual processing and generalization may prove to be very difficult. A child may also readily give responses to stimuli presented on a board and not really have mastery of the meaning. On the other hand, some children may move quickly through the different levels of abstraction to comprehension of words presented with orthography, and even to reading skills. The higher the level of abstraction the child can master, the more flexibility is possible with the language board.

There are four general types of stimuli which represent different levels of abstraction on the language board. The most concrete is the object itself or a representative object. For example, one could actually use a pencil pasted to a board to represent to the child the concept of "pencil" or "time to do written work". For a child with no severe visual problem, however, one is usually able to use direct representations with photographs of the objects. The two-dimensional photograph is more abstract than a small representative object for some children.

The next level of abstraction above the object or photograph board is a drawing or pictograph board. Drawings or pictographs obviously do not have many of the attributes of the intended object or representative object, but many fairly low functioning children can master this level of abstraction. The flexibility allowed by this type of stimulus is extensive, both in terms of the skills it can foster in children and the practical aspects of constructing a board.

The highest level of abstraction is that of the abstract symbol, most commonly words in English orthography. Other symbol systems that are highly abstract can represent concepts on a similar level as words. The most widely used of these is Bliss Symbols. One must be careful, however, with such symbols as Bliss to realize the degree of abstract conceptualization that is required to use the system. Because of their picture-like appearance, Bliss Symbols are often considered to be similar to pictographs. The way that Bliss Symbols relate different components to form the entire meaning may be of such a nature that some children who cannot handle the printed word can make effective use of them. But they are significantly more abstract than drawings or pictographs which look like that which they represent and use one picture to represent a word or concept.

Although a particular child may not be able to use words for his or her own communication purposes, one typically places the word or words that another symbol represents under the stimulus on the language board. These words allow the person who may not be familiar with the meaning of the particular stimulus to understand the child. Also, if a child is functioning at a fairly high language level, he or she may learn to recognize some words by having them paired with the less abstract stimulus.

Another means of classifying language boards is by language level. There are various ways in the language literature to describe the developmental stages of a child's language, and we will use one of them simply to give some idea as to how the usual construction of language boards parallels such a classification.

The simplest form of language board represents concepts by one word, symbol, picture, or photograph. Such a means of representation might be called holophrastic language. The child, for example, may point to a picture of a toilet on the board. The child may be attempting to express the concept, "I need to go to the toilet." Although all of the stimuli on the board are isolated units, these units often have a rather complex (and perhaps esoteric) meaning.

Although the form of the language board may only be changed slightly to move to this next stage, there is a significant difference in complexity of language when two words or symbols are used together. This type of usage parallels the pivot-open stage of grammar. The child may use one word as the basic conceptual element of the communication and join to it other words for more complex ideas. For example, a child may have the symbol which represents "go" on his or her board and several other symbols that are commonly paired with this word. Such pairs as "go toilet", "go workshop", and "go bus" may be common expressions.

The next level of language commonly found is the phrase level, usually in the form of Subject-Verb-Noun. Common productions of the child on this type of board would be "Bobby go bus", "Bobby like cake", and "Miss Smith eat cookie". For children who are capable of mastering more complex language, the form of this phrase may be changed. Some children may move on to more mature language skills and begin using complete sentences of more complexity. Such a higher level of language must still be structured on the board and usually some accepted system of representing the grammatical constructions of sentences is employed. Perhaps the most common of these systems specifically developed for hearing impaired children is the Fitzgerald Key.

The two forms of classification presented above--stimulus type and language level--are often closely interrelated. Usually the simpler the language level is, the more concrete the stimulus is. However, there may be children who can understand rather abstract symbols but be unable to put symbols together in any complicated syntactical form.

Different levels of boards may also be used for the different purposes of the child. If a child has been introduced to a new level of language, for example, but is for practical purposes still dependent upon a lower level, the higher level board may be used primarily in language teaching sessions with the child until mastery is complete. The lower level board might be labeled the "operative" board, whereas the higher level board which the teacher is trying to teach the child to use might be called the "target" board. Additionally, there might be reason to use a different level board for a different setting for practical reasons. Although a child is capable of using a phrase board, a physical therapist may use only a holophrastic board to provide structure for exercise sessions.

## Adaptations

The forms of adaptations of language board for individual needs are endless. Whether a child is visually handicapped or has severe physical limitations, a means for indicating items on a language board can be devised if the child has the cognitive ability to use the stimuli. The two sources from the Trace Center that were previously mentioned contain many of these adaptations, but we will describe some of the basic adaptations that we have used.

The basic matrix form of language board allows an extensive number of items to be used by a child who may have physical limitations that prevent indication of items outside a small area. Indexing of specific items are done by a series of two or more code items. Such a method requires a level of abstraction that is not easily developed in many children, but it is an invaluable system for the higher functioning child with physical limitations.

One form of this matrix system for children who are extremely physically limited is the ETRAN board (Vanderheiden & Grilley, 1978, p. 53). The child has a frame with the indexing symbols located such that they can be indicated through eye movements. The observer is seated opposite of the child and can observe where the eyes are focused and thus determine the intended communication.

Electronic boards usually function either with a manual scanning signal or an automatic scanning signal that can be stopped by the child when it reaches the intended symbol. These boards come with a variety of switches that can be operated by very simple movements of different parts of the child's body or even by suction of the child's breath. The primary problem with electronic boards is the expense involved in their purchase.

For children with severe visual handicaps, language boards can have tactual symbols. For the child who has sophisticated enough language skills, Braille can be used. For the lower functioning child, tactual material which is more easily discriminated, can be attached to the board. With one child in our program who had only a rudimentary communication ability and who had poor motor control, a language apron was developed. The apron contained two rows of five pockets. In each pocket was a material that was easily tactually distinguished and which had a specific meaning. A dry sponge indicated "drink", a feather meant "eat", etc.

For children who are confined to wheelchairs, language boards are usually integrally joined to the chair, often on a tray. Many types of attachments are possible, however. Some children in wheelchairs have used Velcro to attach small boards to the side of their chairs so that the boards are available when they need them.

## Construction of Boards

Most special education budgets are such that teachers cannot easily afford to buy commercially produced language boards for their children. Most teachers are quite creative and experienced in the development of materials. A teacher can usually find other teachers with whom to interact as to new ideas of piecing together available materials for an inexpensive and utilitarian board. We will present a few ideas here to initiate the creative process for our readers, although we are confident that teachers are quite capable of designing individualized forms that are the most appropriate for their particular children.

For a basic language board, corrugated cardboard can provide maximum rigidity and durability for its weight. The corrugated surface can be covered with tagboard which is the actual surface on which the symbols are placed. Cloth-backed tape is the best material for edging a board and binding folding boards. Clear, self-adhesive plastic paper such as Contact paper tends to be more durable than lamination.

Additional symbols can be drawn with indelible felt tip pens on the plastic paper or lamination. There are also available commercially produced pictographs and symbols that are self-adhesive and rather inexpensive for those who may not be artistically inclined. Photgraphs are commonly used and instant photographic prints serve the purpose of letting the child see the photograph immediately so that a connection between it and the actual person or object is more easily understood. The instant pictures are practical in the long run because one can know immediately if the shot came out and not have to wait for the developed print. Two things can save money when using this rather expensive method of taking pictures. Three people or objects can be photographed together and then the pictures cut apart. Also, when a child no longer has use for a certain person's picture, it can be kept in a photograph file to be used later with another child.

## The Development of a Language Board

Developing a functional language board is an individual process for each child. The teacher or therapist must first decide at what receptive and expressive language level the child is functioning. Certain readiness skills such as attention may need to be developed first or the teacher might be able just to go straight to the holophrastic board composed of three or four photographs. The teacher may first use the board by pointing at the proper photograph to indicate a certain meaning or person. After the child has experienced using the board for receptive language, the teacher can then move on to having the child use it for expressive purposes, eventually on a spontaneous basis.

Once the child has experienced useful and rewarding communication through the simple board, the teacher can then move to more complicated language levels and stimuli. Of course, the child may already have language skills developed with another mode and the teacher may need to begin at a higher language level.

The individual needs of the child influence the overall design of the board and the placement of symbols. For the physically handicapped child, the symbols must be easily reached. Another less obvious consideration is the emotional reaction of the child to certain stimuli or types of boards. One child, in our project, for example, would not tolerate stimuli on his board that were less than about two inches square. A teacher must be alert for problems such as these that might hinder the success of a language board and not be quick to blame the failure on the particular mode.

## Conclusion

We hope that these brief descriptions, explanations, and instructions have served to whet the appetite of those who have not tried this particular mode with multiply handicapped children to attempt to apply language board to their children's program. Besides our own successes with language boards, we have received much feedback from other professionals who have indicated that language boards have worked with a variety of children after other modes had failed to produce usable communication skills. As was indicated in Chapter 5, neither this nor any other communication mode is a panacea to solve all of the educational problems of a child. But the use of language boards may make a valuable contribution to a multiply handicapped, hearing impaired child's ability to develop and use communication and language skills.

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## Chapter 7

# A Program for Parents of Multiply Handicapped, Hearing Impaired Children

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## Introduction: Purpose

Recent legislation has mandated that which conventional wisdom and educational research have long recommended--direct parental involvement in the education of handicapped children. Parental involvement and quality parent-training programs have proven useful not only in the educational development and emotional growth of the child, but in family integration and parent adjustment as well.

The Home Visitation component of the Multiply Handicapped Education Project at The Pennsylvania State University has attempted to develop and implement a comprehensive model of service delivery for families of children identified as primary project constituents. This chapter is an outline of our efforts in this area, and a picture of the model as it has developed through its many trials, reversals, and changes. Certainly, this model should be viewed as a flexible one. Attempts to involve and train parents in the educational and social growth of their children will differ in as many respects as families themselves differ. Some of our suggestions or methods will not be appropriate to every family situation. This model does not attempt to address every problem or need that parents of multiply handicapped children may present. What we hope to provide are guidelines, roughly drawn, that may serve as a starting point for education personnel who intend to provide such a service in their own communities.

### Goals

Stated in a concise form, the goal of a comprehensive parent program might read as follows:

> to increase the interest and capability of parents of multiply handicapped children in providing effective educational training and a sound educational environment in the home.

Although simply stated, this definition belies the multifaceted and complex interactions in which one should expect to be involved while providing comprehensive family services. In the following pages an attempt is made to explore and clarify the extent to which a parent program may become involved with any particular family, the kinds of services it can expect to provide, and the nature of some of the problems that can, and often do, arise. This chapter is divided into three major themes which are summarized below.

## Planning

The first major theme is the initial planning necessary to organize a parent program. This planning takes place before any fieldwork is actually begun and involves taking each aspect of the goal definition and raising questions as to what information is needed in the early stages to carry the program toward full development. It is simply an exercise to help organize and clarify our thoughts around our stated objectives as defined in the goal definition. The questions that are raised in this initial planning step will serve as a guide through subsequent stages and give us direction for actually meeting parents, school personnel, and others that play a role in the intellectual and social development of multiply handicapped children.

## Information Gathering

The second theme is a description of the important sources of information that are available for identifying family needs and developing strategies for intervention. Gathering information about school programs, community service agencies, family organization, and home environment can make important contributions toward a comprehensive needs assessment for each family. During the course of this model project, the home visit was used for the delivery of services, but it also was a useful and effective tool for assessing family needs and training parents.

## Individual Family Plan/Intervention Strategies

The Individual Family Plan (IFP) is a written document listing the hierarchy of needs for a family based on information gathering and needs assessment. It represents the particular needs of a family to which we must apply strategies for intervention which are appropriate and within our resources. The IFP is an attempt to organize the services we expect to provide into a coherent, comprehensive, and meaningful approach. Determining the hierarchy of family needs is actually a cooperative venture among parents, school personnel, and the home visitor. The role of the home visitor in this process often is most fruitful in mediating the dialogue between parents and teachers and promoting their cooperative efforts toward the educational and social growth of the child.

Finally comes the time when actual service provision and parent training begin. That is, specific family needs, outlined in the IFP, are addressed, needs ranging from building parent interest and cooperation to actual training in behavior modification techniques to alter behavior or teach new skills. The IFP may call for helping parents better understand their child's handicapping condition, for altering parenting styles, and/or for making outside referrals to Community Service Agencies for other professional services. Because of the wide range of possible services, effective planning in the early stages of program development is essential. A thorough working knowledge of school programs, community resources, and individual family dynamics must be arranged prior to intervention so that time and energy are optimally spent. This outline of a parent program will focus primarily on preparation and planning.

## Planning Overview

What are the implications from the definition of our goal about the kinds of services we can expect to provide? Answering this question is an important first step in our program planning. We must delineate, in general terms, the kinds of needs families are likely to present and the type of services we must provide to satisfy those needs. By extracting and isolating the key elements in our goal definition we can analyze each element, asking questions and making statements that clarify the issues we will be facing.

Isolating the key elements of our goal definition we have:

(1) Parent interest

(2) Parent capability

(3) Effective educational training

(4) Home environment

What specific family needs do these general categories represent? What family services do they suggest? To help us plan for the services we can expect to provide, we can break down each element into more specific goaloriented statements and questions.

### Assessing Parent Interest

No parent program can expect to achieve even the smallest measure of success without the cooperation and active interest of its most crucial component--the parents. Implied in the goal of increasing parent interest is that some interest already exists. A decision has to be made as to whether a particular set of parents has sufficient interest to allow our efforts for parent training to succeed. We must formulate some criteria with which to judge the level of parent interest. To maximize the efficiency of the limited resources of our program, parent selection is an important consideration. Parents that refuse to accept intervention or strongly believe they do not need or want the services being offered should not be pressured to participate.

The following questions may form the basic criteria for determining the level of parent willingness to actively particpate in the program and accept intervention:

(1) Have the parents been involved in the education of their child in the past? To what extent?

(2) Do the parents believe that they, or their child, could benefit from special home services?

(3) Is the goal definition consistent with the expectations the parents have for themselves and their children? That is, are our goals also their goals?

(4) Are the parents willing to accept outside intervention and guidance?

One must remember that lack of involvement by parents in the past may represent shyness rather than disinterest. Furthermore, a lack of awareness of need may be more a factor of inexperience or ignorance rather than conscious lack of cooperation. Parents often do not understand their role as primary teaching and socializing agents. They may feel that their child's educational and social growth should be left to "experts." They may not feel confident or comfortable as teachers, especially when the handicapping conditions are multiple and/or severe.

Reticence of parents to engage in active participation in and enthusiastic acceptance of intervention can have many sources to which we should be sensitive. Parents may feel intimidated or bewildered by the behavior their children display. They may be frustrated by previous attempts to teach skills or control behavior with haphazard methods and homemade remedies. Perhaps their understanding of the handicapping condition is such that the parents underestimate the capability or potential of their child to learn and grow. Although in some cases these reactions and perceptions might serve as strong motivation to participate in a parent program, they often serve to increase parents' feelings of helplessness and to destroy their confidence, motivation, and will to change the status quo.

This picture of the hesitant parent, fearful or not confident of his or her ability to effect change in a child may be contrasted with the opposite extreme. At least superficially, some parents enthusiastically welcome efforts to improve their efficacy as parents of handicapped children. Upon closer examination one may find that they feel a strong obligation to cooperate and not to refuse freely given services toward such a lofty goal, the intellectual and social development of their handicapped child. But cooperation, derived from a sense of obligation or social pressure not to appear disinterested or uncaring, can place the parents in a position of conflict with their actual desires or beliefs. Although this sense of obligation may sustain parents' efforts for a short while, it probably will not lead to eventual success of intervention efforts. Success is more likely to come by exploring with parents the real reasons behind their acceptance (or rejection) of our services, and by working toward modifying their perception of the situation so a more substantial basis for participation is established.

Other factors may interfere with the desire of parents to cooperate with intervention efforts. Working parents, particularly those with large families, simply may not have the time to spend with their children that the program demands. Some may find that the parent-as-teacher role places too much stress on the parent/child relationship and interferes with the relaxed, playful, emotionally gratifying interaction that they have with their child. Child rearing styles are often developed and habituated by parents while raising older, non-handicapped children and may prove very difficult to alter, even when the need to provide different, more effective parenting techniques is clearly evident to the parents themselves. Finally, and perhaps most important, intervention services usually arrive long after the family has come to terms with the trauma caused by the birth of a handicapped child. Reactions of parents seem to follow a general sequential pattern of denial, grief, guilt, and eventual mature acceptance of the nature and consequences of the handicapping condition. Some parents reach this final, mature level of adjustment, but others do not.

Regardless of where parents are in this progression, we can be sure the struggle has been difficult. During the early development of their handicapped child, most parents have had extensive interactions, consultations, directions, and advice from a myriad of medical and educational professionals. Much of this advice has probably been complicated, confusing, and even contradictory. The parents' quest for an adequate diagnosis and a hopeful prognosis is often protracted and almost always contains some element of fear and frustration, leaving them drained, disappointed, and ungratified. Their image of the professional as someone who can relieve the pressure generated by the unknowns about their child may have been changed to a much less complimentary image.

If a multiply handicapped child is of school age by the time intervention takes place, parents have often accepted the presence of a handicapped child in the family in such a way that the family can function in a coherent and consistent manner. Intervention along the lines outlined by this program might be perceived as a disruption to a delicate adjustment by parents and other family members to a family crisis. Intervention activities may suggest to them that more and/or better parenting techniques are necessary and could be perceived as a reminder of their failures, or as a suggestion of their incompetence as a parent. Worst of all the necessity for intervention may be seen as a signal that their adjustment and sense of well-being is false and that beneath the calm exterior of their family life, their inadequacies are quietly damaging the development of their child. Memories of an earlier, more difficult time that they wish could be forgotten are rekindled.

Such reactions to intervention tend to produce denial of need and withdrawal. In this context parental resistance is an adaptive response to that which threatens stability and family integration and should be respected. Such resistance does not mean that intervention should be forsaken, but this issue must be recognized and an attempt made to deal with it if it arises. Later in the chapter, suggestions will be made for avoiding such problems and for establishing positive rapport with parents based on mutual trust and respect.

Summary. We have explored some of the issues that are pertinent to the evaluation of parent interest. The nature and complexity of these issues points out that it is not sufficient to assess parent interest only on the basis of a cursory examination of past experience or expressed desire to participate. An honest discussion with parents about the new role they will be asked to play and the extra effort it may entail is needed. The following is a summary of issues which should be explored with parents during early contacts. They are pertinent to parent interest and suggest the first level of services that should be provided.

(1) The extent of parental awareness of and involvement in the educational program of their child may indicate their interest in participating in the parent program.

-- Explore thoroughly the extent and nature of parental interest including their awareness of the child's school program, their anticipated need for the services offered, their goals and expectations for the child, and their willingness to accept intervention.

(2) Necessary elements for successful participation include a willingness to act as teacher and socializing agent.

-- Assess the availability of time, energy, and inclination to work with their child in cooperation with other professionals.

(3) Parent adjustment and family integration may be delicately balanced. Intervention may threaten to damage this balance.

-- Determine if parent adjustment is based on an accurate evaluation of the facts and consequences of the handicapping condition.

-- Evaluate the extent to which intervention threatens parent adjustment and established family patterns.

This information is important to initial planning as it helps to evaluate parent interest. It gives clues as to how rapport can more readily be developed, motivation increased, and parents' ability to actively participate in the growth and development in their children enhanced.

## Assessing Parent Capability

Different parents bring different skills and capabilities to the task of parenting handicapped children. There are also various levels of proficiency within any skill area. When planning a parent program, one must outline the skills necessary for effective parenting with regard to goals and then assess parent skills along those lines. Questions about family needs in this area should be asked, and then services that answer those needs must be planned.

The minimal goal of a parent program should be to provide the necessary instruction or direction to parents to prevent them from undermining the educational and behavioral objectives of the school program. Restated in positive terms, one must provide parents with the information and training that permits active support for ongoing school programs. The skills necessary for such an accomplishment are easily within reach of most parents if a willingness to cooperate is present. A crucial component of any parent program is its effort to motivate parents to become informed and supportive of their child's school program.

For parents to be supportive of their child's school program, they should be familiar with the specific educational objectives of that program. The home visitor can provide a valuable service by communicating to the parents not only the specifics of the school program but also the teaching techniques used to achieve the objectives. Another goal should be to establish a system of parent-teacher communication through which parents can follow classroom developments.

To assess the ability of parents to carry out a homebased program successfully, one must assess their adaptability to role change. Parents may hesitate to assume a teaching role with their children, but this role is one parents often assume through informal methods of teaching which occur naturally in response to day-to-day situations. Examples are the many explanations parents offer to the questions their children ask and the directions they give their children for completion of a task. More formalized academic goals and procedures may cause more consternation for parents. Teaching cognitive skills like reading and math or using behavior control methods that go beyond typical parenting are examples of more difficult activities from which parents may retreat.

Decisions about the level of parent training to be offered is based not only on the extent of existing informal and formal teaching techniques used by parents, but also on their effectiveness. For example, interaction between parent and child in a learning situation which is characterized by overprotection may decrease the learning possibilities for the child by offering too much assistance. Conversely, the parent style of interaction may be harsh or threatening and put too much pressure on the child to perform. In other words, the quality as well as the quantity of home instruction must be assessed.

The important question which must be answered at this time is, at what level of training do we begin with any particular parent? The home visitor, planning for intervention and parent training, must determine the level of functioning suitable to each individual parent given the skills they bring to the teaching role. This assessment is based on discussions and observations of parent-child interaction and gives us an idea of the capacity of parents to function in the teacher role. The following are some of the points of interest in carrying out this assessment.

First, do the parents spend much time with the child in formalized educational activity? That is, do they sit down together on a regular basis and do homework that is assigned? Do the parents follow the progress of the child by inspecting papers and projects that are brought home from school? Do they systematically test in the home the knowledge that schoolwork implies the child has? Do the parents seem to understand that which is being taught by the exercises the child does in school?

Secondly, it is perhaps even more important to observe the informal style of parent-child interaction. Does the parent show understanding for the special difficulties in learning their child exhibits? Do they have patience when trying to make a point to the child that is difficult to learn? Do they spend extra time and effort explaining in simple, direct language the material they want to get across? Does the parent tend to manipulate the child or the environment out of frustration, fatigue, or convenience so they can more easily accomplish their aims?

One should look for signs indicating the ability of the parent to recognize children's problems related to schoolwork and whether or not they have a problem-solving attitude toward recognized difficulties. That is, do they act on their perception of the child's problem and do so in an educationally useful way? Furthermore, do they include in their teaching and remedial efforts the significant others in the life of the child (siblings, extended family members, other caretakers)?

Another important issue is parent effectiveness in controlling child behavior. Obstreperous, inattentive, or withdrawn child behavior interferes with the educational process at home and at school and undermines the relationship on which a sound educational environment is built. Poorly controlled child behavior makes home learning situations difficult to structure. An uncooperative child creates frustration and anger within parents, decreasing their interest and motivation as well as their perception of the possibility of success in working with the child on educational goals. Parents who have difficulty controlling their child's behavior feel helpless to support school programs or to act as primary educators themselves.

The interactions between parent and child in the context of problem behavior gives information about the parent/child relationship as a whole by focusing attention on the reaction of the parent in a stressful situation. The learning process of handicapped children is characterized by slow and laborious progress. To be successful involves overcoming fears and frustrations, coping with stress, being willing to apply fresh methods when old ones fail, and vigilantly maintaining a positive disposition toward the child. No one can be expected to do all of this with perfect equanimity. However, the extent to which stress opposes the effective development and consistent application of positive parenting techniques is crucial.

Parents who respond poorly to pressure may vent their frustrations in angry outbursts, harsh tones of disapproval, and physical manipulation of the child to complete tasks or behave as expected. Or they may withdraw their effort at control by accepting poor child behavior as the status quo. Inconsistent administration of discipline or reinforcement and threats of control without the accompanying consequences are still other expressions of poor adjustment.

Several questions should be asked as to the manner and effectiveness that parents display in controlling the behavior of their child. Which behaviors do parents perceive as appropriate or inappropriate, tolerable or intolerable? Are they internally consistent, i.e., do the parents react to a child's behavior in a similar way each time it occurs? Are they consistent with the expectations of behavior that are enforced in school? Do the methods of control correspond favorably with those used in school? Do parents use punishment more often than positive reinforcement? Is punishment used to control aggressive behavior at home while teachers focus on positive reinforcement of cooperative behavior to minimize aggressiveness at school?

The use of one method of control at home, while quite a different method is used in school, is counter-productive and needs to be exposed and corrected. Parents should understand the significance of inconsistent behavioral expectations and control methods between home and school. The behavior of children is often better controlled in school than in home, often because of more effective techniques used by teachers and clear expectations children have for what is demanded of them. Discrepancies between home and school behavior suggest a service a home program can provide: to arrange for an effective and consistent method of behavior control in the home, and one that complements the school approach.

Summary. We have discussed some of the indicators that help to assess the capability of parents to act as positive influences in the education of their children. These include the assessment of parents' ability to assume the role of teacher by observing the interactions with their child during educational activities. We assess formal and informal interactions, i.e. parent techniques used to advance specific educational objectives and informal parenting and interaction skills in day-to-day learning situations. Both the quantity (extent) and the quality (effectiveness) of these interactions is noted.

Decisions about the level of training that our program will provide are based on this assessment. For parents whose informal interaction skills are well developed the decision to provide advanced training in teaching techniques is made. For those whose interaction skills are poorly developed (e.g., parents who are overprotective or unnecessarily harsh or demanding) the decision to provide training in more effective interaction skills is made. In the latter case, training in teaching techniques for specific educational objectives becomes a secondary program goal. We further described, as a critical aspect of overall parent capability, the ability of parents to control child behavior.

A summary of these issues and the services they suggest are listed below:

(1) Active support of the school program by parents depends on their familiarity with the goals of the school program.

  -- Communicate, in terms parents can understand, the specific educational objectives and the methods used to achieve these objectives.

  -- Develop a framework for ongoing home-school communication.

(2) The parenting style should be characterized by emotionally supportive and educationally useful interactions.

  -- Develop in parents a sense of their role as a primary teaching agent.

  -- Assess and develop (or remediate) the formal and informal interaction skills and teaching techniques used by parents.

(3) Good parenting involves the recognition of a child's difficulties and action directed to reduce those difficulties.

- Promote a problem-solving attitude and an atmosphere of confidence toward child-change in parents.
- Help parents recognize and use the contributions of extended family members (and other caretakers) for the growth and development of the handicapped child.

(4) Controlling and shaping child behavior is a valuable skill which improves the learning potential of the child.

- Educate parents as to the significance of behavioral expectations and control methods which are consistent between home and school.
- Assist parents in developing an internally consistent behavior control approach.

With respect to parent capability, we recognize the above as possible family needs and the corresponding services which address those needs. In the second part of the chapter, we will present possible training methods which help to satisfy those needs. But before we proceed we must complete our analysis and planning in the two remaining areas specified by our goal definition.

## Effective Educational Training

As one plans the actual training activities of parents for their children, one must address two general areas: (a) training around specific educational objectives; and (2) interaction style between parent and child. The first of these will be the focus of the present discussion. The second will be discussed as the central issue of Home Environment, which immediately follows.

The kind of intervention that better enables parents to serve as teachers for their children involves providing parents with teaching techniques by which they can actively participate in the child's educational progress. First, educational objectives to be worked on at home must be selected by the teacher and the parent. Objectives may be selected for several reasons, including the following: the intrinsic difficulties of teaching or learning the task may demand more time than afforded during school hours; the task may require home support because it naturally occurs at home more than in school; the teaching of the task may be requested by the parent; the parent and teacher may wish to cooperate on a task closely related to parenting.

Planning for helping parents to become involved in training activities relates closely to many of the issues we've discussed previously as well as some new ones. The initial need is to motivate parents to take an active interest in the schooling of their children. Some mechanism for home/school communication must be developed to keep parents informed of the direction and progress of the school program. The level of training appropriate to an individual family, whether it be in formal teaching techniques or in the parent-child interaction style, must be identified. One should not offer training in teaching techniques to parents who have not demonstrated educationally useful interaction skills toward their handicapped children. After these considerations one is ready to begin helping parents to learn teaching techniques which will actively support the school program.

Before discussion of the planning of training activities, one other digression may help to tie together our previous planning with the present. Talking with parents about their efforts and instructing them in the peculiarities and unique circumstances under which their handicapped children learn is helpful in setting the stage for later training. Teaching parents about their children makes the job of teaching parents to teach their children easier.

The idea that in the course of perhaps several hours the home visitor is able to instruct parents about the special circumstances of their own child may seem presumptious! But circumstances with which a parent has become very familiar may often be unintentionally overlooked or not given the special consideration that the unusual circumstances demand. As previously mentioned, parents tend to settle into a set of reactions and expectations, a mode of interaction, which they have found suitable to their own purposes. These purposes serve to maintain emotional equanimity but do not always effect educational progress. One must attempt to improve the educational usefulness of the parenting style, and at the same time help maintain the emotional stability of parents and family integration.

Teaching parents about their children means bringing to the foreground that which parents probably know but which has receded into the background--that 'special' educational efforts are necessary for their child to ensure academic progress and the acquisition of social skills. These 'special' efforts include continual attention and consistent methods to be effective. Parental as well as teacher effort is necessary to put these principles into use.

The complacent, unsupportive attitude of some parents is not difficult to understand in light of the stress created by the presence of a multiply handicapped child in the family. But our reaction must be to oppose this complacency as successfully as possible. We must help parents realize (i.e. use what may already be understood) that active support of the school program has many benefits--to the parents, to the teacher, and ultimately to the child.

One can see that much of the preliminary groundwork for planning training activities by parents points to earlier planning that has been set down in the objectives of previous sections--interest and capability. A mechanism for home-school communication must be established and fervently maintained. This includes a system which allows parents and teachers to cooperate in the development of the educational program and to share the responsibility of maintaining a consistent approach to the methods and expectations of the program, and which encourages parents to participate actively in both support and teacher roles.

Now to return to the central issue of this section: to supplement, improve, or introduce new teaching techniques used by parents. There are three general themes planning must follow. The first is assessing the skill level at which a parent functions, the second is goal selection, and the third is devising parent training methods and teaching techniques that are consistent with the previous two themes.

Skill assessment. One must assess three aspects of the technical competence a parent displays in the teacher role: understanding of the needs of the child; understanding of the rationale behind specific teaching methods; and the ability to follow the guidelines of a teaching method to positive completion.

Goal selection. Selecting educational objectives toward which parents will work is a collaborative effort between the teacher, parent, and home visitor. They must establish a hierarchy of objectives, that is, which educational tasks receive priority attention. The priority is determined by teacher assessment of academic functioning, parental concerns and expectations, and the decision of the home visitor on the competence of parents to serve as teacher.

Teaching techniques. The specific teaching technique chosen for each objective depends on the nature of the task itself and on the skill level of the parent-teacher. The technique should be consistent with that used in the classroom, although not necessarily on the same level of sophistication. The work of the home visitor is accomplished through explanations, demonstrations, supervised practice by parents in specific teaching techniques, and follow-up contacts until parental independence is reached.

These three goals naturally interact with each other. For parents with low skill assessment, we would not select as a goal a complex learning task and then attempt to teach that task through an equally complex behavior modification procedure. The skill a parent demonstrates determines the goals that are selected. Low skill assessment leads to a selection of goals that are simply stated and more easily attainable. The teaching techniques used should also be straightforward to allow the parent to use them effectively. As parents grow in interest and skill, more complex goals and elaborate techniques become reasonable and appropriate.

Many variables contribute to the level on which parents can be expected to function. They range from native intelligence to more pragmatic determinants such as the amount of time they can afford to work with their children. In between are various degrees of motivation, interest, and sense of responsibility--all of which affect, for better or for worse, parents' ability to function as teachers. The educational goals that are selected and teaching techniques that are used to reach these goals must take into account the limitations of each individual parent to perform effectively as a teacher.

The home visitor responds to these variations in parent interest and skill in two ways. The first has been presented--a thoughtful and realistic selection of goals and appropriate teaching techniques. The second concerns the training approach used by the home visitor--regulating the level of structure provided and the pace of the parent training process.

The level of structure means the relative amount of freedom or control given to the parent in the training situation itself. Pacing refers to the speed with which parents move through the various stages of training or through different, more elaborate teaching techniques. Decisions have to be made about how much material should be presented at a single training session, about the depth of explanation given to any training procedure, and about the amount of supervised practice that is necessary before a parent is able to work independently and effectively. The parent should be permitted ample time to become comfortable with a particular stage of training or teaching technique before they are asked to move forward.

One last issue pertinent to this discussion is reinforcing parents for their efforts. One would hope that positive results in child change and a stronger sense of parent efficacy would be intrinsically reinforcing and motivating. But the home visitor, by using the advantage of a positive personal and professional relationship with the parents, can play a large part in reinforcing the efforts of parents.

Summary. The attempt here has been to raise questions and to plan for services related to parent training around specific educational objectives. Parents must be provided with instruction in teaching techniques designed to develop their skills as teachers. Essential groundwork for parent training is accomplished in earlier planning--an arrangement for home-school communication and the motivation of parents to overcome complacent attitudes toward the role of teacher. Three areas--skill assessment, goal selection, teaching technique--have been discussed. The technical competence of parents is the basis on which specific educational goals are determined. The complexity of the teaching techniques which parents will be trained to use must also be appropriate to their functional capability as teachers. As the teaching skills of parents improve, the level of instruction we offer gradually becomes more sophisticated.

Variations in parent capability demand different responses from the home visitor in the training methods applied. The level of structure and pacing of instruction must be regulated with individual parents. Reinforcing parents for their efforts is a constant consideration.

The following is a summary of these issues and the services they suggest:

(1) Providing parents instruction in teaching techniques around specific educational objectives involves a coordinated effort by teachers, parents, and the home visitor.

- Promote home-school communication to keep parents informed of the direction and progress of the school program.
- Increase parent motivation and involvement by emphasizing their child's "special" needs.

(2) The selection of goals and the complexity of instruction offered depend on parental skill assessment.

- Help parents choose realistic academic goals.
- Offer instruction in "teaching" techniques that are within the functional limitations of individual parents and that are consistent with those used in the school.
- As skills improve, offer correspondingly more complex instruction.

## Home Environment

The primary consideration of the nature of the home environment is to what extent it is conducive to the development and generalization of the educational and social objectives outlined for the child. Three areas are central to the creation of an advantageous home environment--parents' understanding of the handicapping condition, parent-child interaction, and parent adjustment. A discussion of these areas aids in planning services that contribute to the overall ability of the parents to structure an educationally sound home environment.

Understanding the handicapping condition. The accumulation and integration of accurate information about the nature of handicapping conditions is essential to the full development of positive parental attitudes toward a child. Insufficient or false information about the severity of the handicap, the limitations it imposes, or the implications for the child's development can lead to parental attitudes and behavior that interfere with all attempts to parent the child adequately.

Parents must have the ability to make a realistic assessment of the capability of their child to function independently. Their expectations for the child and the role they play in raising the child depend greatly on their understanding of the afflicting handicaps. Their perception of the severity of handicaps and the limitations they impose influences parenting styles. These parenting styles are habituated over the years and often become solidly fixed reactions made in response to perceived child needs. When this perception is inaccurate, the parents are led into misguided and sometimes damaging responses.

Many cases of mismanagement by parents or lack of initiative in problem-solving can be traced back to faulty assumptions about the capability of the child to learn, change, or grow. Overprotection of the child, characterized by controlling and intrusive parenting, can grow out of an undervaluation of the child's potential. A feeling of helplessness or uselessness on the part of the parent can have the same source. Also possible, although less common with the multiply handicapped child, is an overvaluation of the child's ability. The consequent parental reaction to misbehavior or failure is that of being overly punitive and/or disparaging.

Educating parents toward a clear, realistic understanding of the nature and limitations of the handicapping condition can be useful in remediating this major cause of poor parent-child interaction. The home visitor must be thoroughly aware of the complicating conditions that surround each child. To assess and deal effectively with parental misconceptions when they arise, there are many sources for this kind of information--teachers, psychologists, other educational specialists, and medical personnel involved with the child. They must be sought out and utlized to the best advantage.

Parent-child interaction --the parenting style. In earlier discussions we have made the distinction between parents' capability to act as teachers and their effectiveness in interpersonal relations with their child. When one's focus of attention turns to the improvement of poor interactions between parent and child, efforts are directed toward observing and understanding a parenting style, its educational merits, and its effect on the emotional stability of the child.

The home environment greatly influences handicapped children in such areas as their self-images, their ability to control their behavior and respond properly to authority, and the extent to which they independently seek out and profit from various learning situations. Clearly, the conditioning effects of the home environment contribute to the manageability of the child in the school setting. The character of the home environment, and therefore the nature of its influence, relies heavily on the quality of the parent-child interaction. Positive interactions between parents and child reflect the ability of parents to monitor and control their own reactions to their children. Poor interactions reflect a lack of understanding and control over their responses. A parent program can attempt to help parents better understand their interactions and control them in an educationally useful way.

By looking closely at the interactions between parent and child, by examining the manner in which parents conduct themselves in relation to their children, we can gain insight into the effectiveness of the parenting style. We can then make recommendations and encourage modifications when it seems appropriate to do so. The following is an elaboration of a list of observations that signal the general characteristics of the parenting style, the quality of the parent-child interaction, and the nature of the home environment.

A characteristically overprotective relationship between the parent and child can manifest itself in many ways, most notably by constant intrusions and excessive controls placed upon the child's activities. Exaggerated concerns about personal welfare or of property damage resulting in restrictions on the child's mobility and a dampening of curiosity are not uncommon. Parents may often strive to maintain the stability of their personal and family life by supporting the status quo, by displaying a lack of interest in applying new approaches to their handicapped child. They may appear content to interact in the same way that was appropriate during the child's infancy, despite obvious growth or the development of new skills and potential that maturity and education produce. In these situations where parental responses lag behind the development of the child, the environment becomes stultifying rather than stimulating. The child is denied the free use of developing skills and the dignity of taking risks in a relationship with the outside world. Similar effects are created by an overdemanding home environment, characterized by pressure to perform, punitive disciplinary techniques, and harsh, threatening tones of disapproval for incorrect or forbidden behavior.

On the other hand, a home environment which creates a positive learning atmosphere for the handicapped child contains a variety of elements of relaxed, pleasant, and playful stimulation. There are inducements to attempt various tasks, drawing on new potential and learned skills with ever-increasing independence. Behavior control is firm and consistent and sympathetically rewards and encourages good behavior instead of harshly or punitively discouraging poor behavior.

These various characteristics of the parenting style can be observed by the home visitor and pointed out to the parents with more objective accuracy than parents can see themselves. Furthermore, by virtue of a positive relationship with parents, the visiting professional can often induce more changes with encouragement and instruction than parents' self-awareness or self-criticism could otherwise produce.

The home visitor is in the unique position of being able to see and make comparisons between the child's behavior and performance in school and at home. Comparisons can be made between the effectiveness of the teacher's approach to various problems and that of the parents, between the cognitive demand characteristics of the two environments, and between the responses of the child in the two different settings. For example, the home visitor might notice that the level of spontaneous communication by a particular child is much higher in school than it is at home. By observing the child in the school setting, he or she might learn of a complex organization existing among the staff members which offers structured and repeated opportunities for the child to communicate. Responses to the child's wishes are withheld until they are requested by a formal communication mode. If children attempt to satisfy their wishes without communicating, they are met by firm, but essentially positive reaction by teachers demanding communication first and satisfaction second. The demands on children are structured, clearly understood, and consistently administered. The children know that which is expected of them and in this way communication skill development is promoted.

At home, quite a different scenario may be enacted. The home visitor may notice that the parents have no structured, formalized system demanding the use of communication skills by their child. Sometimes communication is expected and demanded, and at other times it is not. Occasionally the child is punished or firmly reprimanded for impulsive action to satisfy wishes, while at other times parents intuitively respond to the child's desires without any gestures or verbal indication whatsoever. This type of inconsistent interaction in the home without planning or direction is unlikely to be of much educational value. In fact, the opposite is true--it undermines the efforts of the teacher, who expects to use less prompting and see more spontaneous communication emerging over time. The difficulties for the child are obviously compounded by having to distinguish between two contradictory environmental standards, i.e., to learn different sets of expectations and behaviors in response to different interaction styles.

When the discrepancies between the child's behavior at home and at school, and the differences in approach taken toward the problems that arise, are relayed to the parents, these discrepancies become powerful arguments for the usefulness of changing parental responses. Taken alone, these comparisons often do not impress parents in a way that guarantees changes in their parenting style. Teachers offer endless reports of similar recommendations that result in no effectual change. But the direct involvement of the home visitor, encouraging, instructing, and following-up on parents' efforts, has the potential to be more effective.

There are other elements of the home environment and parenting style that can be observed and perhaps modified to create a more fruitful learning atmosphere for the handicapped child. For example, by noticing how the child spends free time, the activities in which the child independently engages and those which are provided by the parents, one can get an indication of how stimulating the home environment is. How responsive or engaging are the parents in conversation or play? Remembering that both quality and quantity of interactions are important dimensions in assessing the home environment, one wants to know how parents greet their children's attempts to interact--their many questions, their expressions of interest, and perhaps their opinions on different matters. Are they met with clear explanations and a patient understanding? Do the parents seem to use these opportunities to explore with the child the various relationships that exist among themselves, others, and the world? Or do they ignore such attempts or put them off with curt replies or complicated explanations that could not possibly be understood and which consequently engage no further interaction?

The child who experiences little stimulation at home characteristically is unexcited by school activities, appears withdrawn and disinterested, and is difficult to motivate. The home visitor can encourage more stimulating interaction by suggesting activities, exercises, toys, or games, and even by providing materials when possible without ever having to confront parents directly about the unstimulating quality of home life. Often parents are happy to overcome this lack of stimulation and are grateful for the inducement to do so.

The area of socialization activities is another concern to the home visitor. What opportunities does the child have for interaction with people other than members of the immediate family or in places other than in the home? Handicapped children have a marked tendency toward isolation. Many factors seem to contribute to this isolation and an extraordinary efforts is needed to combat it. Novel interactions with different persons--friends, relatives, or strangers--provide a diversity of experiences which is of educational value. The ability to respond appropriately to a variety of new people, places, and changing circumstances, without fear or confusion, is a learned skill. The opportunity for this kind of learning is often delayed or denied the handicapped child. When school attendance is the single activity of access for the child to outside influences, the home visitor is called upon to intervene. By educating parents to the value of other socializing activities and giving practical suggestions, even direct assistance in arranging activities outside the home, the home visitor can expand the range of social influences for the child. Many community organizations offer services in this area, but parents may not know about them, nor have the motivation to seek them out. Later we will discuss some of the resources available to most communities.

Parent adjustment. The parents' level of personal adjustment greatly influences their capability of parenting and maintaining family integration. The presence of a handicapped child in the family compounds the difficulties in adjustment and places an enormous amount of pressure on the parents' personal stability. A comprehensive parent program must consider this aspect of the home environment and plan services that minimize its potentially damaging effects.

The first indications of serious maladjustment or family disintegration that one receives often come directly from the parents themselves through conversation. But with the exception of obvious psychotic manifestations or gross indifference or abuse to the child, there is difficulty in pinpointing with any certainty the extent of emotional instability experienced by the parent. Even more difficult is to communicate concern when serious maladjustment is suspected, unless it is carried out within the hospitable context of a close personal/professional relationship between the home visitor and the parents. The extent of parental instability and conditions within the family that contribute to stress, anxiety, and disintegration are largely outside the view of a casual observer.

These problems are often hidden below the surface of interaction and inaccessible to intervention without the establishment of a good rapport and a measure of personal involvement with families with which one comes in contact. Without strong rapport there is little chance of providing any useful services in this context. Building rapport will be discussed later in more detail.

A parent program may have neither the resources nor the inclination to deal directly with problems of parent adjustment. A home visitor may act as a referral agent when such services as individual and marital counseling, financial management, or medical assistance is indicated. However, efforts may be directed toward providing a support system for the parents, educating them as to the availability of private and community resources, directing them to appropriate professional services, and facilitating communication among service agencies involved with the family.

Summary. Is the nature of the home environment conducive to the development and generalization of educational and social objectives outlined for the child? Generalization of educational and social objectives to the home and other social environments should be accomplished by the active participation of the parents. The usefulness of parents' efforts is greatly influenced by three processes--their realistic understanding of the handicapping conditions, the quality of their informal interactions with the child, and their own personal adjustment.

Some of the issues involved in the development of a sound home environment and the services that a parent program can provide to encourage that development are summarized below:

(1) Accurate information about the handicapping conditions of the child is necessary for the creation of positive parental reaction to the child's behavior.

  - Communicate to parents the realistic limitations that the handicapping conditions impose.
  - Help parents to modify their perceptions and reactions to the child so they are consistent with the potential of the child.

(2) Positive parent-child interaction is essential to the development of an emotionally healthy and educationally advantageous home environment.

  - Help parents learn to monitor and control their responses to the child in educationally useful ways.
  - Encourage parents to provide a more stimulating environment by offering practical suggestions and direct assistance when possible.
  - Encourage parents to expand the social interactions and influences of the child to lessen social isolation and its potentially damaging effects.

(3) A parent program must be prepared to respond to problems of adjustment demonstrated by parents.

  - Build rapport that permits a frank and open discussion of parents' adjustment and their ability to cope with the problems of raising a handicapped child.
  - Become familiar with, and prepare to refer parents to private and community resource agencies that offer services appropriate to their needs.

This process of questioning and clarifying each element of our goal definition has provided some idea of that which we need to know about families to plan services appropriate to their needs. By no means is it an exhaustive list of issues or concerns. Undoubtedly, other questions will arise during the course of parent programs that have not been discussed here. At attempt has been made to provide direction in planning strategies for intervention. Gathering information about the many unanswered questions is the next step of this program and involves field work--meeting and establishing relationships with parents, teachers, other educational specialists, and community agency representatives.

## Information Gathering

### The School Program

A thorough familiarity with a child's school program provides information about the child's level of functioning, his or her behavior, the educational objectives of class placement, and also information about the family. Building a relationship with classroom teachers, speech, hearing, and physical therapists, the school psychologist, and other school personnel gives one access to many valuable sources of information which can provide answers to many questions derived from our earlier planning.

Educational objectives. The classroom teacher is perhaps the single most valuable source of information we have concerning the school program. In special education classes the teacher may work with a child for several years and develop an intimate working relationship with the child and the child's family. Even when the teacher is unfamiliar with the child, past records of academic accomplishment, present testing, and close observation provide an adequate base for the development of a working plan. In either case, criteria have been established to assure that the educational plan considers an accurate assessment of the child's level of functioning. Details of the goals and teaching methods that will be the focus of the year's work must be provided. Federal law mandates that every handicapped child must have an Individualized Education Program (IEP) specifying the educational objectives chosen by the teacher and the methods used to reach those objectives. A review of the IEP at the start of the school year gives the home visitor a clear and concise picture of the child's academic and social achievement. It spells out the specific educational objectives, in graduated levels of difficulty, and represents the expectations of the teacher for the child's development.

As previously mentioned, one primary goal of a parent program is to train parents in teaching techniques that are consistent, in both goal and treatment, with those of the school program. A home visitor's own familiarity with the school program allows him or her to pass this information on to parents clearly and adequately. Discussing with teachers the nature of each educational objective, the rationale behind the choice of these objectives, and the usefulness of each method for teaching the objectives gives one better understanding of the school program.

Witnessing the educational process in action--the classroom dynamics and teaching methods as they are actually used--can be of immense benefit later when transferring these methods into the home setting. Observing the classroom teacher in person in the display of his or her craft can reveal many techniques, interaction styles, and attitudes that promote a positive learning atmosphere for the child and increase the child's capacity for learning.

In addition to providing an overall picture of the educational program, teacher consultation and reviewing the IEP also can help to locate particular classroom problems that may exist. Educational objectives which are especially difficult to teach, or which demand a continuity of home and school practice, can be isolated and selected for input from parents. The teacher can suggest ways of dealing with these problems at home, and in many cases provide teaching materials that permit home study to simulate more closely the educational process that goes on in the classroom. Obviously, this kind of practical information makes the work of the home visitor much easier. Parent training becomes goal directed and the educational objectives, teaching techniques, and materials used become more consistent with those of the school program.

Teacher consultation is useful not only in regard to academic content of the school program but also to any problems of social behavior that exist in the classroom. Different behavioral expectations and control methods are especially difficult for handicapped children to understand and integrate. The result is often a confused perception within the child as to behaviors that are permitted or forbidden, rewarded or punished. Clarification of these issues begins with an understanding of the approach the teacher finds most effective in the classroom and contrasting it with that which is observed at home. The key element for the home visitor, once again, is establishing a consistency in approach between home and school.

Other school professionals are likely to be involved with the child and therefore have contributed to the IEP. Speech and hearing therapists, physical therapists, and possibly other support staff have planned for services they expect to provide by outlining goals and teaching methods related to their specialty and the child's needs. In the same way, consultation with these persons can further guide the home visitor into a more directed and useful service. A consensus among the various teaching personnel can establish a hierarchy of needs, locating the areas of the child's educational development that require priority attention. This information equips the home visitor with a personal grasp of the educational needs of the child, the specifics of the school program that address those needs, and practical suggestions and concrete plans with which to approach interested parents.

Information about parents and the home environment. The need for other kinds of information about the home environment can be satisfied to a limited extent through school contacts. The most useful and reliable information is to be gained by direct observation and conversation with parents in their home. Second-hand information and the impressions of others can be no substitute for the information obtained through the building and maintenance of a positive professional relationship between home visitor and parent. However, information from persons knowledgeable about the interests, capabilities, and personal styles of individual parents can direct and supplement our own investigation and provide material with which we can compare and contrast our own observations. Those who already possess a working knowledge of the parents can offer background information which serves to buffer the often difficult first contact with parents and the initial presentation of our family-services program. They can offer advice or give clues as to the best approach the home visitor might use to interest parents in the program. They can indicate areas in which parents have demonstrated an interest or experienced a problem as a starting point for discussion and cooperation.

In earlier planning, we found it necessary in connection with the parent selection process to get an idea about the previous involvement parents showed in the school program of their child. When large numbers of people are eligible for services, one may need to screen this population for enrollment in the program. Information gleaned from teachers and therapists can help in the selection process by suggesting parents most likely to be amenable to intervention and capable of following through with the procedures of parent training. On the other hand, school personnel can point to parents they feel are in greatest need and can most benefit from services of this kind.

The school psychologist and social worker. After parents are selected, decisions must be made about specific services to offer them. These decisions depend on other factors such as assessment of parent capability, parent adjustment, interaction style, and the overall nature of the home environment. Although information along these dimensions may be best collected by observation and conversation with parents in the home, the school psychologist and social worker have training and experience which permits them to offer expert advice and information about families with whom they have had contact, particularly with respect to parent adjustment and family integration. The home visitor may be working with parents who have had reason to consult with a psychologist or social worker previously. Sharing ideas, non-confidential information, and strategies can guide the home visitor in an approach, suggesting alternate ways of dealing with problems that otherwise may not have been tried. When alerted to the nature of a parent program's services and objectives, psychologists and social workers become resource persons on whom a home visitor may call when difficult problems of personal adjustment and family integration arise. As mentioned, some problems of this type may be outside the range of the program's direct intervention. In such cases, the recommended procedure is referral to outside agencies. The psychologist and social worker are in an excellent position to direct the home visitor to the various community agencies that offer services appropriate to each special need.

## The Home Visit

The home visit is the central element in almost every aspect of the parent program we have discussed. It is the principal method of information gathering and an indispensible tool for assessment on each of the four dimensions taken from the goal definition--parent interest, capability, educational training, and home environment. In addition, actual work with parents--building interest and motivation, selecting goals, modifying parent-child interactions, improving parent teaching techniques--will be carried out within the home setting.

The following is a discussion of various issues related to information gathering and the home visit that were found to be important in the Multiply Handicapped Education Project (MHEP). Perhaps this presentation will serve as a starting point for others, directing them toward even more time- and cost-effective means of service provision. Of course, one must begin with planning--making arrangements for initial parent contact, organizing the information that has been collected and the information needs that remain, and preparing a presentation for parents of the rationale and the goals of a program. The last part of this section is a discussion of rapport building and some suggestions and techniques that may be useful in its positive development.

Initial parent contact. The parent program described in this chapter was begun at the start of a new school year. This had obvious advantages in that the planning of the parent program coincided nicely with the development of IEPs by school personnel. The home visitor had a list of names of prospective MHEP children located in several classrooms within the Intermediate Unit with which we were cooperating. ("Intermediate Unit" is the name given to special education service areas in Pennsylvania.) Each of the classroom teachers were contacted and arrangements were made for subsequent school visits. The fist few weeks of the school year were used primarily for assessment and IEP development. The home visitor was present for many of the assessment procedures and planning meetings and observed each child at work in the classroom. A familiarity with each child's previous academic achievement and classroom behavior, in addition to the specific objectives for the coming year, was fostered. In pre-IEP staffings, input from all related staff persons, including the home visitor, was consolidated into a complete educational plan. Initial contact with parents took place in the context of this close association with the school staff and the IEP development. During the actual IEP meeting, in which parents are invited to review, alter, and approve the plan, the home visitor was given the opportunity to greet each parent and present a basic outline of the parent program. After the meeting there was a discussion with parents about their interest and availability to participate. Some reticence on the part of parents seemed to be caused by shyness or fear of the unexpected, which perhaps would be overcome with time and exposure. Therefore, even when parent interest seemed low, an attempt was made to arrange at least one meeting to discuss plans in more detail and to provide an opportunity for assessment of their interest and need for participation. There was an exchange of names, phone numbers, and addresses, and then an appointment for a home visit in one week's time was made.

This procedure offered the advantage of providing a relatively easy and organized access to parents' attention in a socially comfortable way. The expressed interest of other school staff persons in our efforts to engage parental support and provide training served to influence parents in a positive way. The first meeting fit easily into the format of the IEP meeting and gave both the home visitor and the parent a chance to meet and form impressions in a relaxed atmosphere with interested intermediaries. The parent had time, between the first mention of the program and the actual home visit, to adjust to the idea. The home visitor, in turn, was provided with more information about the parent--observations made during the course of the meeting--and time to organize and prepare an approach best suited to each family.

A home visitor can get a good impression of individual parents, and the nature of the work that must be done, by carefully observing the reactions of parents to the IEP meeting. The amount of input they offer--

suggestions, corrections, and additions to the plan--indicates their interest and awareness of the school program and their child's needs. One will want to notice if parents passively review and approve the IEP, or if they demand explanations or reasons why some objectives rather than others appeared in the plan. Did they inquire about teaching methods? Did they compare observations of child behavior in school and home? Did they seem to note what the child will be working on during the year and express an interest in making the home goals consistent? These observations are useful in planning discussion for the first home visit, and later, for selecting and organizing program goals.

Preparing for the home visit. The time between the IEP meeting and the first home visit was spent organizing a detailed presentation of our program and itemizing the information we needed about the family to plan and apply a specific intervention service. Many of the details of our program presentation were the same across all families. For example, we wanted to explain that the basic rationale came from the belief that the parents' role as primary teaching and socializing agents for their child was a crucial one.

Also an attempt was made to emphasize certain aspects of the program we felt most applicable to each particular family based on information we had already collected from school personnel and child observation. That is, information about specific child skills and deficits and evidence of parental responsiveness or lack of responsiveness to child needs led us to assume that certain aspects of our program would be more valuable than others. For example, if a child with gross motor difficulty made gains during the school year but exhibited extensive losses over the summer months, parents may not have had, or may not have used, techniques that maintain child improvement. This information indicated an area to which our information gathering and consequent intervention must attend.

This example represents just one small instance of an entire range of information needs we must satisfy in our early meetings with parents. In our previous planning we outlined many questions and possible services. In our observation of children and discussions with school staff persons, still other questions were raised. Reviewing these materials and organizing them in such a way that we know the information that we are seeking, allows efficient and intelligent discussion of our plans with parents. In this way, our questions may be answered, family needs located, and remedial services applied where appropriate.

Certainly, information on family needs remains incomplete until consultation with parents takes place. Family needs, other than those discovered through preliminary means, may emerge and preempt those originally perceived. In fact, this can be expected. The emphasis here is that early home visits should be planned. Our information needs, when clearly outlined, facilitate discussion and parent involvement, out of which grows a more accurate picture of family needs and service provision.

Building rapport. Much of the information we seek from parents about their home life and parenting style is sensitive material, especially from their point of view. Some will find it difficult to be honest when relating their deepest feelings associated with the task of raising a multiply handicapped child. By the time intervention takes place, parents often have reached a satisfactory adjustment to the extent that a tolerable compromise has evolved between their inner feelings and outward behavior with respect to their child. Although parents may perceive their adjustment as a satisfactory one, modification of parenting techniques may often improve the educational usefulness of the home environment.

Most parents with whom one works (and who probably have not actively solicited help), must be prompted to participate. They must be convinced that changes in their parenting style can be relatively painless and at the same time meaningful for the child. For this reason, we have emphasized the role of the home visitor as one of instilling into parents the desire and motivation to become involved with the school program and assistance in the home.

Gathering specific and sometimes sensitive information about families is necessary for worthwhile goal planning, but is difficult to obtain without enthusiastic parent cooperation. They must be made to feel that sharing personal elements of their private life will have a "pay-off", and perhaps more important, will be respected. Therefore, a crucial aspect of information gathering and the motivational role of the home visitor is the development of an interpersonal manner which communicates unwavering positive regard toward parents and a sympathetic understanding of their values and behavior. One must have a manner that encourages frank and open discussion of delicate matters, but one must also have an accompanying sensitivity to the problems and dilemmas parents face in a difficult situation. The sharing of personal information should neither embarrass nor discourage, and should be free of condescending implications and threatening overtures.

That which often takes place between persons in serious relationships may be attributed to factors such as personal "chemistry", the readiness of the participants to accept each other. But it is also apparent that one's behavior can be monitored and regulated in such a way as to be productive with regard to one's goals. There are certain precautions that the home visitor can take that will enhance the possibility of developing a positive rapport and at the same time gather information that is needed.

Forms of information gathering. The mode of interaction by which information is solicited and collected by the home visitor is usually one of three forms. The first is observational. In the classroom, one may observe child behavior, teacher-child interaction, and teaching techniques. with specific goals in mind. In the home, in a similar process, with equally explicit goals, observation can be extremely useful. It permits us to gather information while avoiding direct confrontation with sensitive concerns. The perceptive home visitor is aware of information that is needed and will take advantage of the opportunities to note such aspects as parents' responses to a child's misbehavior when it takes place during a home visit. Do parents respond with gentle persuasion or punishment, restriction or explanation? How does the child respond to the parents' efforts--with fear or indifference, with confusion or understanding of parents' demands?

There are many situations in which informative observation can be made. Some situations to be observed can be created as well. Bringing school materials to the home visit and inviting parents to work with their children can be illuminating. Is the parent familiar with the school work or interested in what and how the materials are meant to teach? Do parents seem comfortable with and effective in the teacher role? Is the child attentive and responsive to the parent? At least some information along nearly every dimension of our previous planning can be collected through observation. It is limited only by the degree of preparation and imaginative use of different family situations by the home visitor.

Observations, in school and at home, have raised many questions and perhaps some confusions. Parents' interest in these observations often parallels one's own, and the opportunity for energetic conversation around our observations is always present. Informal conversation provides by far the most effective means of building rapport and accomplishing the overall goals of the parent program. In the context of friendly, involved conversation, the home visitor is able to make the greatest impact on parents by eliciting comments about their concerns, needs, problems, expectations, and goals. One is assisted in developing rapport by gaining insight into the parents' perception of the task of raising a multiply handicapped child. The parents' motivation is increased by addressing problems that they themselves identify, rather than goals selected by others. These are the issues with which parents struggle on a day-to-day basis and which carry with them the greatest emotional and physical investment.

Educating parents as to the needs of their child and motivating them toward action along predetermined lines are difficult tasks, especially when goals are derived from an outside source. Parents are much more likely to respond consistently and effectively when their input determines program objectives. The role of the home visitor is more effective when it draws parents into a dialogue, resulting in their realization of their child's needs and of the necessity for parent involvement.

Respect for parental concerns and acceptance of their problems and values convey a sense of empathetic understanding and develop trust, which leads to parents' willingness to accept and cooperate with intervention. The home visitor must be resigned, at least initially, to accept the level of involvement with which the parents are comfortable. To build a more comprehensive family program, one must proceed patiently and only on the basis of parent responsiveness and desire to do so.

The third form of information gathering -- the questionnaire format--is more direct, but operates on different level of human contact. It contrasts rather sharply with observational and conversational approaches in that it is more formal in nature. Although a questionnaire may be more efficient in obtaining information, it engenders less trust and intimacy toward the home visitor and the intervention process. One should remember this intervention has not been solicited, that these services are taken to the parents in their homes. Techniques or demeanors that evoke a more formal clinical setting may reduce one's effectiveness to interact genuinely with parents. Parents may be more responsive when professionals perceive their role as partners and not as clients. A clinical demeanor, use of technical terms of education and psychology, or a condescending attitude alienates rather than engages parents in a process of active participation. One should help parents to feel that they are equipping themselves to be more effective, that is, that they are doing something that enhances their parenting skills and not that something is being done to them. The use of formal information gathering with a questionnaire may create this feeling of being a passive receiver of intervention.

From the standpoint of building rapport, direct questioning about home life, parenting habits, involvement with the school program, and personal adjustment is the least useful of the three methods described. In the early stages of parent involvement, building a mutually respected relationship should be the primary focus. This relationship will be the foundation for parent training. Later, within the context of an established relationship, more direct methods of interaction and training can be used without alienating parents.

In addition to the type of information gathering that is used, the manner of information gathering and parent training is important for rapport. This manner must reflect the lifestyle of parents with whom one is working. One should strive for a compatability between presentation and methods and the objective circumstances of the parents' home situation. When the educational level of parents or their familiarity with the material permits more elaborate explanations of ongoing educational processes, such explanations are appropriate and serve to include the parents on a level commensurate with their ability and interest. However, simple and direct techniques, without accompanying technical jargon or unnecessary elaboration of process and rationale often may be indicated.

The home visitor's manner of dress can also communicate an identification with certain families. Social cues, taken from observations of lifestyle, employment, dress, or interpersonal manner can indicate expectations and values parents hold. They should be noted and acted upon to provide the greatest "cultural consistency" that is possible. Some parents may expect or prefer that the home visitor talk, dress, and act in a more conventionally professional, formal way. Others will expect a more relaxed manner of speech and attire. One should remember that the impact a home visitor makes may be as much a result of the form of presentation as of the program content.

## Community Service Agencies

A comprehensive parent program must address family needs beyond the educational realm. Although parent training in teaching techniques was a starting point for the Multiply Handicapped Education Project, it became apparent in the earliest stages of our planning that certain family conditions made this goal an inappropriate beginning. Poor interactions between parent and child, parental misunderstanding of handicapping conditions, unrealistic expectations and/or unnecessary limitations placed upon the child by parents are family conditions which demand services of quite a different character. Educating parents about their handicapped child and training them in interaction skills is prerequisite to training in teaching techniques.

The present discussion will focus on a class of family needs existing outside the educational sphere, the role of the home visitor with regard to these needs, and ancillary services provided by community service agencies that can address them. Actually, community service agencies may be viewed as both a source of information for program planning and, in themselves, effective strategies for intervention.

Community service agencies are public and private organizations that offer a wide range of social, medical, psychological, and recreational services to the local population. The availability of such services varies among communities with such factors as socio-economic level, population density, and the civic attitudes of their constituents. In a remote, rural area, access to these services is often restricted.

Some agencies to which we will refer are state or federally supported, and often mandated, such as the Youth Services Bureau of the County Board of Assistance, and Mental Health-Mental Retardation Organizations. Others are private, national organizations which reach out to even the smallest communities. These might include the CP Foundation, Easter Seals, the YMCA, Scouting groups, the Association for Retarded Citizens, and the American Red Cross. Still others are organized on a local basis such as church youth groups, hospital clinics and auxiliaries, and social clubs.

The goals of our parent program call for an effort to enhance the overall supportive nature of the home environment as well as specific educational activities. Three general areas are related to this objective, and community service agencies are good sources for reaching the goals in each area.

Health-related needs. More often than many people might expect, parents of multiply handicapped children display helpless resignation to the limitations caused by their children's handicaps in the areas of educational and social development. They may also fail to make use of medical support services related to the handicaps because of their general perception that the efforts of the handicapping condition are irreversible and uncontrollable and that adaptive responses to the condition cannot be successful. Parents, for example, often neglect hearing aid maintenance, do not take advantage of opportunities for clinical re-evaluation and treatment, or refuse to enroll children in speech classes or physical therapy outside the school program. All these services are provided by community agencies, often without cost to the family.

Socialization needs. The role of the parent as a primary socializing agent for the child is one which we have emphasized. Many parents, however, lack the initiative to seek out opportunities that could enrich their child's social atmosphere. Community agencies offer a wide variety of activities and services designed to provide social stimulation and recreation for handicapped persons in controlled, as well as natural settings.

Parent adjustment. We have discussed some of the obvious and more subtle difficulties parents face in their adjustment to the presence of a handicapped child in the home. Raising a handicapped child, while creating problems in itself, is a pressure which can exacerbate other, more naturally occuring problems in family life. Among parents, emotional stability can vary along individual and environmental dimensions, from inner predispositions to mental fatigue to destablizing situational events of their life circumstances. Sound parenting of handicapped children is threatened as emotional stability, personal and marital integration, or financial solvency deteriorates. Both parents and the home visitor should be concerned about the adjustment made by parents to these conditions. Community agencies exist which offer services designed to assist parents in developing more effective coping mechanisms and in making smooth adjustments to the myriad problems and pressures with which they struggle. Specific intervention strategies using community resources will be discussed in the final section of this chapter.

A common thread runs through each of the three areas of concern presented above--health, socialization, and adjustment. That is, mechanisms exist within the community which can assist parents in meeting their role obligations and facilitate personal adjustment. They need only to be sought out and put to use. It is the responsibility of the home visitor to gather information about the nature and availability of the services offered by community-based organizations. When specific information about all community resources is collected, their services are more easily within reach when situations arise that call for their use. Gathering information before intervention takes place permits the home visitor to respond decisively and accurately when parents' questions and family needs arise.

Information about the availability of community resources assist in identifying the kinds of services we ourselves are capable of providing. That is, it either limits or expands the range of services which can be included in our program planning. Gathering this information involves an awareness of the kinds of services that are needed and contacting and interviewing those in a position to offer such information. Our experience has been that community service providers are extremely encouraging, helpful, and informative, not only about their own programs, but about others that may offer more appropriate services within the community.

Summary. An investigation of the school program and the IEP designed for each child, provides comprehensive and accurate information on many levels of interest--the child's present academic functioning, educational and social goals, special classroom problems and teaching methods--all of which contribute to the creation of a consistent approach between home and school.

Contacts with other professionals within the school setting provide information about parents and the home environment, which is used to supplement or be contrasted with our own observations. This information might include the previous level of parent involvement, impressions and advice about which approach might best obtain parents' support for our program, or areas of interest, experience, or problems parents have demonstrated in the past. The school psychologist and social worker have training and experience that allows them to be expert resource persons when problems of parent adjustment or family integration arise.

The home visit is the central element of the parent program in which our observations, assessments, and actual interventions take place. The home visitor systematically plans visits that are structured, but at the same time relaxed and socially comfortable. Initial parent contacts and brief presentations of programs fit easily into the format of IEP meetings. A detailed presentation of our program plans, specifying aspects that appear to be particularly needed or appropriate, takes place during the first home visit. In early visits, conscientious efforts are made to elicit parent concerns, fears, ideas, and interests. Parents are more accepting of intervention and motivated to participate when their input into the program format and goal planning is considered.

The accomplishment of goals in every area of the parent program depends greatly on the successful establishment of rapport with parents. Observation and informal conversation can be used to collect most pertinent information. A more formal approach to information gathering may interfere with the friendly, relaxed interpersonal relationship between the home visitor and parent. Every attempt should be made to make the program comfortable for parents, including a sensitivity to their lifestyle, educational level, and interpersonal manner.

## Intervention Strategies

### Needs Assessment

Information gathering on the school program, the home environment, and community service agencies provides a picture of each family's needs and the resources available to the home visitor for intervention strategies. As a necessary organizational exercise, a plan should be written, similar to the school IEP, that lists the specific objectives outlined for each family and the methods to be used to achieve those objectives. An Individual Family Plan (IFP) should include needs and services related to each major program area: educational objectives, parent-child interaction, socialization, and parent adjustment.

Under each program component, a hierarchy of needs should be established in which the most important aspects of parent training are addressed first, that is, those areas of parent functioning on which later skill development depends. For example, parent training in teaching techniques would become a secondary emphasis when parent interaction skills need improvement. In most cases, however, it is possible to operate on two or more levels simultaneously. The development of positive interaction skills can be emphasized within the context of other needs. For example, when working on academic tasks, parents have an opportunity to learn and use new and better ways of approaching their child on a social level. The issue that represents the primary concern in this case may not be the teaching technique or academic progress of the child, but rather the interaction skills--learning to react effectively to control erratic behavior, learning methods of reinforcement for positive behavior, and learning to control the environment to optimize attention and concentration. When parent-child interaction is more fully developed, our efforts may be directed toward improving the teaching skills of parents.

With this type of activity, another important aspect of the parent program--improving socialization opportunities--can also be incorporated. The home visitor can suggest, model, and/or provide materials for social exercises in the home. Parents can be referred to community resource agencies that offer socialization opportunities. Working simultaneously within different and complementary areas of the IFP can represent an efficient use of time and materials. It can also prove to be complicated and confusing to both parents and the home visitor. However, a clear and concise organization of the IFP will provide a logical coherence and direction throughout the implementation of the parent program.

In addition to a hierarchy of needs, the IFP should include a description of the methods employed to train parents in teaching techniques, to effect changes in their parenting style and home environment, or to enhance parent adjustment. Information gathering in the school provides the prototype for teaching techniques around educationally related goals. The improvement of interaction skills requires an understanding of the facts and consequences of the handicapping condition and the learning of new ways to approach the child which are both educationally useful and emotionally stabilizing. An investigation of community service agencies provides referral options for emotional and other health-related problems, as well as opportunities for socialization and recreational activities.

The importance of parent input into the development of program plans has been emphasized as a primary means of building interest and motivation. This applies to even the earliest stages of family program planning. The needs, concerns, problems, and services which parents identify as highest priority must be respected. When they conflict sharply with the recommendations of the home visitor or other professional consultants, an effort must be made to isolate and discuss the important variables at issue and reconcile professional opinion with parents' demands. Nothing seems to so quickly alienate parents than the perception that their needs are being ignored or autocratically dismissed as being unimportant or inappropriate.

## Home-School Communication

The importance of organizing and implementing an open and on-going channel of communication between parents and teachers has been implied by several aspects of the parent program. Perhaps most important is that this channel provides parents with information about the day-to-day activities, progress, and problems of their child's educational development, without which their interest and motivation to participate actively and to support the school program is jeopardized. Without an ongoing, structured mode of home-school communication, cooperation between parents and teachers cannot be directed or controlled, feedback from teachers on parents' efforts cannot be made, and the continuation of parent support after the direct services of the home visitor terminates cannot be maintained.

The model of home-school communication must be organized so that a two-way flow of information between parents and teachers develops. In organizing such a model, the home visitor catalyzes and mediates the efforts of parents and teachers to interact and cooperate. Through previous information gathering, the home visitor is in the unique position of being closely familiar with both the child's school program and home environment. Child deficits experienced in the school setting, whether behavioral, academic, or social, have become apparent. Parents' interests, problems, and goals presumably have been elicited and discussed. With this information, the home visitor is able to mediate home-school communication in an effective manner.

In establishing a model of home-school communication, the initial active role of the home visitor is to facilitate the exchange of information that parents and teachers need to cooperate in the education of the child. Typically, classroom objectives and training methods, taken from the IEP, as well as other classroom activities and exercises are annotated for and discussed with parents. Parent training strategies are applied to the home situation which are consistent and complementary with the school program. Similarly, the interests, efforts, and progress of the parents in their support of classroom activities are presented to teachers in frequent meetings to keep them informed of the work going on at home.

The picture of the home visitor then is that of a liaison who encourages and directs the cooperative efforts of both parents and teachers toward a common goal--the consistent application of expectations and teaching methods in school and at home. The home visitor's active role as a trainer and educator of parents is maintained as long as necessary. But the role of facilitating this communication process must gradually diminish as parent and teacher interest builds. One should remember that a goal of the parent program is the development of an increasing parental independence in providing adequate and educationally meaningful parenting techniques for their children. As parent training takes effect and the program becomes well established in the home, the responsibility for maintaining parent-teacher communication must shift to the teachers and parents themselves. Sharing information and materials and coordinating consistent educational treatments between home and school is an important aspect of the new role parents are asked to assume.

"Lunch-box" communication. One way to begin the shift of responsibility is to urge parents to make daily contact with teachers. This can be accomplished with a very simple method of sending messages to school with the child, briefly stating the work that has been done or the problems that have incurred at home the previous day. If work-sheets, writing papers, or other materials are used, they are also included. Similarly, teachers are asked to respond to these messages with information, materials, and direction of their own, communicating to parents the daily activities, progress, problems, and solutions that occurred in school. Assignments are sent home, directing parents and their children in a regulated series of exercises that follow the present classroom material. A special folder or carry-all can be used for the purpose of exchanging this information. It can be sent to school in the morning with the parents' message, and returned in the afternoon with the teacher's notes.

Both parents and teachers benefit from this procedure. Teachers can chronicle the work and progress of the parents and make suggestions about alternate methods of teaching academic material or dealing with behavioral problems. They can propose daily assignments to support the current emphasis of the school program and help parents meet the progressive demands of the child's educational development. Parents are kept informed of daily school activities and provided with direction for their own work with their children. The home visitor's role is to encourage parents to keep up their end of the communication process and to assist them in describing for the teacher the nature of their work and the difficulties they experience with their child. Interpreting and putting into use the directions and suggestions of the teacher in home situations can also be facilitated by the home visitor.

## Goal Selection

Parent involvement. As has been mentioned repeatedly throughout this chapter, parent input into the selection of goals is a crucial motivational consideration that should not be overlooked. The objectives of our parent program must reflect as accurately as possible the expressed needs of parents. Of course, it is equally important that parents' unrealistic expectations for the child's progress be exposed as such. Goal selection should always be reality-based. Some parents will need assistance in selecting goals that fit this criterion. The home visitor has a primary obligation to educate parents in the realistic nature and honest acceptance of the handicapping condition. But parents should be given the opportunity to make decisions about goals as often as possible so they can feel that they control the situation and can be comfortable with it. A feeling of confidence and mastery grows more readily out of active involvement in all aspects of the program and should be cultivated from the very beginning.

Skill assessment and goal hierarchy. Another important aspect of goal selection related to the development of confidence and mastery is the progressive movement of parents through increasingly complex training tasks. This process has been alluded to in another context as establishing a goal hierarchy in which basic skills are taught as prerequisites to more advanced skill development. Here it is discussed in a somewhat difference context.

Our planning and information gathering should indicate, in general terms, the level of parent interest and competence in following the mandates of a training routine. When selecting initial goals and training procedures, the home visitor should consider only simple and easily achieved objectives, using straightforward techniques that offer a high likelihood of initial success. In fact, with parents who exhibit trepidation or hopelessness in the teaching role, one should begin with objectives whch the child has already successfully reached in the school setting. These objectives should be repeated in the home with the parents in the teacher role. The emphasis should be on skill maintenance rather than progress, but using these objectives will serve to demonstrate to parents that their efforts can be helpful and gratifying. Most important it will show them that they can learn new and more educationally useful approaches to their child, who in turn will learn to respond to them in a more acceptable and effective manner.

## Training Methods

Instructional planning. Providing a consistent approach between home and school to child learning and behavior change is supported by planning intervention strategies that simulate the child's classroom experience. However, methods and materials must complement the lifestyle, home environment, and level of education of the parents. The majority of training techniques employed with parents are usually adapted from classroom teaching methods observed in the school. When classroom models are inappropriate to the home situation, modifications are made, even though adapting techniques and materials sometimes can result in significant changes in both the form of presentation and the academic content. When specific academic objectives or teaching methods are not amenable to modification for home use, they may be omitted altogether. For example, some parents may be judged poor candidates for training in behavior modification techniques. If such teaching methods are used in the school setting, modifications are necessary for teaching those academic objectives in the home. When it is possible to use alternate methods and maintain home-school consistency as well, alternate methods should be used in the home. If such alternate methods undermine the school program or complicate the learning task for the child, these objectives should be omitted from the program.

Behavior modification techniques. Behavior modification as a strategy for teaching new skills and changing behavior is widely used in special education classrooms. Persons skilled in the use of these techniques possess a versatile and effective educational tool. Training parents in the use of behavior modification techniques provides many advantages. These techniques can be applied in a strict behavioral format for teaching a variety of academic skills, maintaining positive behavior, and changing unwanted behavior. The implied behavioral principles can also be used to improve informal interactions, enhancing parenting skills in a more general manner. However, for effective practical application a thorough understanding of the basic theoretical underpinnings of behavior modification is necessary.

Training for parents in behavioral techniques can be relatively simple and straightforward, and therefore very useful. Parents who are willing to expend the time and energy necessary for learning these basic guidelines should be encouraged and trained to do so. Some parents may fit this criterion, but many do not, at least in the early stages of program involvement. Parents' interest and competence must be developed to the point where they can realistically accept and follow through with a rigorous and systematic study of behavioral principles. The home visitor must determine when and if parents are readly for such formal training. In our experience, this type of advanced parent training, when attempted before parents were prepared and committed to serious effort, resulted in failure. This failure was sometimes widespread, affecting more than parents' interest in one particular area, and undermining their entire experience with the parent program. The timing of more complex training procedures is very crucial. Presenting specific guidelines for parent training in behavior modification techniques is beyond the scope of this handbook. There are many sources to which the home visitor may refer for this information, if needed.

General training procedure. In the early stages of training (and often throughout the entire training period) a general training procedure should be used that moves parents through several stages of progressive development. These stages are designed to promote parental independence in goal selection, technique development and application, and the generalization of learned skills to other problems and various settings. They are briefly summarized below:

(1) Description. During the process of goal selection, parents identify appropriate objectives and list them in their order of primacy. When planning instruction with parents, the home visitor chooses a teaching technique and gathers the necessary materials to begin training. The next important step is to describe the underlying rationale of each teaching technique in sufficient detail to insure understanding. That is, parents need to know not only the "how" but also the "why" of each training method. This understanding will help them to adapt the learned techniques to subtle changes in educational objectives or in the setting and circumstances under which teaching takes place. Simply drilling parents in method, without encouraging an understanding of the dynamics of learning operating behind the method, does not prepare parents for changes that inevitably arise in the teaching process.

Clearly, the pacing and the amount of detailed description given to the training situation will vary greatly with individual parents. Some parents will quickly master the methods and the rationale behind teaching techniques with only a cursory explanation. Others will need more time for explanation, as well as for demonstration and practice, before they become skilled in any given area. We must be careful to tailor the content and the structure of parent training to each individual situation. Moving too quickly or too slowly through a skill content area, providing excessive or inadequate background information, failing to match the teaching material with the demonstrated skill level of parents--these incongruities interrupt the smooth progression of parents through the training stages. More seriously, they may reduce parent interest and motivation to continue earnestly.

(2) Demonstration. In describing for parents the nature of each training objective and method, one should isolate and emphasize each of the important points of the procedure, trying to clarify the rationale and promote a deeper understanding of the educational process. Demonstrating the teaching method for parents in the home setting and providing a commentary as one proceeds are very useful in communicating important points. Demonstration gives the parents an opportunity to witness the teaching process in action and often serves to elicit questions and highlight problems that arise.

The demonstration simply consists of working through a planned lesson with the child as the parent observes. The trainer must be clear in directions to the parent and sensitive to the difficulties parents may have in understanding or replicating the techniques. Elements that may prove difficult for parents should be isolated and given extra attention. It is important and helpful, for both home visitor and parent, to leave adequate time after each training session to discuss and analyze each of the central points of the demonstration. In this way, parents are given the opportunity to express their confusions or insights, to review the steps of the procedure, and to clarify the reasons for each step. In subsequent sessions the home visitor can concentrate on problem areas discovered in previous sessions.

(3) Supervised practice. The opportunity for parents to demonstrate their understanding of the training objectives can occur in various levels of supervised practice. If the need is present, supervised practice can be highly structured. Such structure would include asking parents to begin by simply describing to the home visitor, step-by-step, the teaching technique just as it would be carried out with the child present. As parents demonstrate their understanding at this level, the next step could be to use a role-playing activity in which parents "teach" the home visitor, who represents the child. The home visitor provides responses that are typical of the child and parents must react to these responses. The role-playing model offers a chance for parents to practice more effective social interaction techniques, as well as formal teaching tasks. After the parent has demonstrated an understanding and appreciation for the task at hand, he or she may be asked to apply the newly acquired skills in a situation in which the child participates and the home visitor supervises.

Positive, constructive feedback from the home visitor should accompany each trial of every stage of training. Parents should be constantly assured that their efforts are respected and that their skills are improving. The extent and duration of structured supevision varies with individual parents and training situations. Some parents may be ready to begin working with their children after they have observed the trainer's demonstration. Others may require extended exposure to the teaching techniques through observation, role-playing, and practice before they are prepared to proceed more independently.

(4) Toward independence. As parents become more fluent in the skills being taught, the structure imposed on the training sessions gradually diminishes. They are encouraged to respond to variations in the teaching materials, child behavior, and academic tasks on their own initiative. New goals are selected as old ones are achieved, and the goal selection process continues with the parents assuming a greater share of the responsibility.

Parents also begin to play a more central role in selecting teaching methods with which to approach these new goals, especially when the methods are similar to those used with previously accomplished goals. The active teaching role of the home visitor begins to fade, and he or she becomes more like a consultant than a trainer, supervising the more independent efforts of the parents. Other areas of parent need become the main themes. It is around these new areas of need that the training process begins anew.

Skill Generalization. So far, the techniques used for the improvement of parent interaction and teaching skills have been specifically oriented to well-defined, concrete learning situations. But the skills parents learn are not meant to be used in such a restricted way. One would hope, of course, that any learning which has taken place is flexible and can be generalized by parents.

This generalization of parent interaction and teaching skills must be developed systematically. Certain teaching methods, such as behavior modification techniques, are used to teach specific objectives, but the principles behind the technique, the learning process which behavior modification utilizes and represents, can be applied to various other learning tasks in both formal and informal situations. The first step in teaching this principle to parents consists of offering them the "how" and "why" of any technique we use. Next parents must be shown the versatility of the techniques, their possible uses in addressing problems other than the particular ones for which the techniques were learned. To do this we must provide concrete examples of the many tasks to which a particular technique can be applied.

In addition to the generalization of skills to various tasks, parents should learn the carry-over of skills to different settings. Eliciting communication from a handicapped child in a program using cue cards at the kitchen table is vastly different from eliciting communication in the marketplace or playground. But the latter are settings in the day-to-day life of the child in which communication is most useful and necessary. Parents should be made aware of the importancce of and given the training to transfer the "kitchen table" technique to the playground, where it ultimately may do the most good.

## Community Resources

Earlier in this chapter community service agencies were referred to as both a valuable source of information for program planning and for intervention. The following are some specific comments about community agencies which were used advantageously to address various family needs in the Multiply Handicapped Education Project.

The availability of such services will undoubtedly vary from one community to another. Those presented below are meant to suggest neither a comprehensive list, nor a list of services accessible to every community. They have proved to be especially useful, and they often may be overlooked by a professional who is not familiar with them. The reader is encouraged to investigation the resources of his or her own community and to use them imaginatively and fruitfully.

### Mental Health/Mental Retardation Agencies (MH/MR)

Generally state supported and community based, MH/MR agencies offer a wide range of mental health and social services. Usually included in their organization is a division of counseling and education, staffed by persons who are available to outline in detail all the services the agency provides, and who can put the home visitor in contact with persons responsible for the services sought. Among the many services MH/MR agencies may offer are the following:

Counseling services for parents. As stated previously, poor parent adjustment can seriously restrict skillful parenting of multiply handicapped children. When parent adjustment is found to be lacking and counseling indicated, referral to MH/MR counseling services is a recommended intervention.

Child assessment and reevaluation. Most MH/MR agencies provide comprehensive services for special children, particularly for the assessment and treatment of the developmentally delayed. Child psychologists are often on staff to evaluate, treat, and make recommendations to school personnel and parents for child care. Often, home-bound evaluation and assistance are available for pre-school children and can be a valuable screening and prophylactic measure for younger children in the home who may need such services.

Respite care and socialization activities. MH/MR agencies often administrate group homes for retarded persons, but as a service to families in the community they may also offer respite care to parents who are in need of supervision for their retarded children. Respite care is sometimes offered only on an emergency basis. However, when group home facilities are available, a variety of family circumstances may warrant respite care services, such as weekend relief for parents who wish to vacation or simply as a socialization activity for children who otherwise gain little social contact outside the home. This activity can be particularly useful during the summer months when socializing opportunities in school are curtailed. Summer day camps are another service common to many MH/MR agencies.

## Association of Retarded Citizens (ARC)

ARC branch offices vary greatly in the extent of services offered. Active chapters offer a wealth of socializing opportunities and other services. Among them are the following: hobby workshops in cooking, dancing, swimming, and sports activities; parent and advocacy groups; scouting and "friendship" programs. Some ARC chapters also sponsor group homes that may offer respite care for emergencies and for socialization.

## County Office for Children and Youth Services

One of the services of this state government office is a Big Brother/ Big Sister program which locates and utilizes persons in the community interested in developing friendships and providing socializing opportunities for disadvantaged and handicapped youth.

## Scouting

Although scouting troops sponsored by several special interest groups (e.g., ARC) are readily located in many communities, the normalizing effect of relationships with non-handicapped persons in "regular" scout troops may offer more advantageous social contact and skill development for many handicapped children. Often a search is necessary to locate a troop interested and capable of incorporating a handicapped child into its ranks. When it is possible to find such a troop, the benefits may be well worth the effort.

## Vocational Training/Sheltered Workshops

Several community agencies were located that offer vocational and pre-vocational assessment and training for school-age handicapped children during the summer months. Depending on the assessment outcome, training and/or recommendations are offered for preparation for competitive employment or sheltered work. MH/MR agencies and other community organizations, such as United Cerebral Palsy and Easter Seals, sponsor training programs of this kind. The local office of the state Bureau of Vocational Rehabilitation can provide information and guidance on the qualifications and financial assistance for participating in various vocational training programs in the community.

## Speech and Hearing Clinics

Besides evaluation and treatment for speech or hearing disabilities, well-staffed hospital, university, and community clinics offer ancillary services for handicapped children and their families. For example, one hospital's Speech and Hearing Clinic offered to some parents and their families in our program individual and group instruction in sign language to help improve their ability to communicate with their hearing impaired child. Some universities have free sign language classes open to the public. Speech and hearing evaluations and, in some cases, therapy are often offered to community residents through university student-intern programs. For school-age children, after-school therapy sessions, in addition to and complementary with in-school programs, are offered, often at no cost to families.

## Conclusion

We have tried to present an outline of a parent program that can effectively increase the interest of parents of handicapped children in participating more actively in their children's development and that can provide parents with the skills they need to support the school's efforts with their children. We have made some suggestions for the development of an educational program within the home that will complement educational activities in the classroom. We have stressed the importance of influencing home environments that they become conducive to the best intellectual, emotional, and social development of multiply handicapped children and to the optimal adjustments of their parents.

One might ask, "How can most special education units afford to implement such a program?" Perhaps the real question in terms of successful intervention with these children is, "How can they afford not to implement a parent program?" We have not presented the answers to all of the problems centered around parents and the home, but we have tried to outline some of the activities that have made a significant contribution to the children who have been served by the Multiply Handicapped Education Project. We hope that our efforts will influence others to increase their efforts in this area, an area which merits extensive financial and staff resources.

## CHAPTER 8

# Evaluation of Programs for Multiply Handicapped, Hearing Impaired Children

Donald L. Peters
Susan Landino

## Introduction

Program evaluation is a systematic process designed to provide information for decision making. It is essential for determining whether a program for multiply handicapped, hearing impaired children is accomplishing its goals, for determining if the various parts of the program are working as well as they should, and for determining the reasons behind their success or failure. Evaluation at its best is not a separate, discrete program component. It is an integral part of all program activities as the program personnel go about their jobs. It is built in at all steps of program development and delivery.

This chapter seeks to define a decision-making framework for an evaluation system that will provide valid and useful information in the form and at the level of detail that is needed. The approach we have taken has been called the "systems approach."

The systems approach is one in which needs are identified, problems are selected, requirements for a solution are identified, solutions are selected from alternatives, methods and means are obtained and implemented, and revisions are made on the basis of discrepancy information until all needs are eliminated. Within the systems approach, program planning and evaluation planning go hand in hand. However, the focus of the remainder of this chapter is on evaluation planning. The organization of the material is directed toward the steps to be taken by the person charged with planning and conducting the evaluation. In the text, these steps and their rationale are explained. At the end of the chapter, we have presented an "evaluation triptik"--a step-by-step listing of activities.

## Mission Analysis

A mission analysis involves the specification of the evaluation profile and the evaluation performance requirements. In other words, "What is to be done?" and "What are the criteria of success?" Composing a mission analysis requires specification of both a mission profile and establishing a set of performance requirements.

### Mission Profile

A mission profile establishes that which is to be evaluated and who the decision-makers are for whom information is to be provided. The mission profile establishes the evaluator's areas of responsibility and the decision-maker's areas of responsibility. The task is not as easy as it might seem.

Program definition. The first step in the development of a mission profile is to establish a global program definition which includes a broad statement of purpose and scope. The statement of purpose includes identification of the target population, the agent, the rationale, the context, the means, the plan, the criteria, and the time span. An example would be:

> The Multiply Handicapped Education Project is a special program for hearing impaired children between the ages of 6 and 21 who have been identified as having conditions in addition to their hearing impairment that present problems of development and learning. It is to be undertaken by specialized staff of Intermediate Unit 16 operating as itinerant teachers and service coordinators, and will use a structured developmental curriculum. It will be implemented by means of a combination of special consultation with classroom teachers, speech and hearing therapists, and a home-visitor, to enhance the communication and learning skills of the children within the three-year span of the project.

Once the broad statement of purpose and scope is complete and has received the affirmation of the principal staff of the program, the program sub-components need to be identified. A sub-component is some unit, within the overall program, that has one or more of the following:

a. Uniqueness of purpose;

b. Specialized staffing or staff arrangements;

c. Uniqueness of target population;

d. Independence of resources;

e. A specific decision-maker or responsible person.

Definition of divisions of responsibility and purpose is important. For example, within the above global program definition at least two sub-components are obvious: one involving consultation with therapists and teachers and one involving home visitation. Implied is a third sub-component involving the identification, assessment, and selection of the target children. Table 1 indicates why these may be considered separate sub-components.

The last column of Table 1 provides a partial listing of decision-makers. Completing the list of decision-makers is the next step in developing the mission profile. In essence, a complete list of those people who need evaluation information is desired. There are always

## TABLE 1

## Sub-Component Characteristics

| Name of Component | Purpose | Staff | Target Population | Resources | Decision-maker |
|---|---|---|---|---|---|
| Selection/ assessment | Identification and selection of children who are eligible for and who might benefit from the Multiply Handicapped Education Project | School psychologist<br>Audiologist | Children with suspected receptive and expressive communication problems as well as other developmental dysfunctions | 1 school psychologist<br>1 audiologist<br>Referral to University clinic | School psychologist |
| Consultation & training | a) Placement of children in curriculum sequence<br>b) Development of alternative teaching strategies and communication modes | Itinerant teacher/consultant<br>Speech & hearing consultant | Teachers and therapists working with children assigned to the program<br>Children with suspected receptive and expressive communication problems as well as other developmental dysfunctions | 2 consultant/ specialists<br>Specialized curriculum<br>Lendable equipment and materials | Itinerant teacher |
| Family intervention | a) Development of home-school cooperation and coordination<br>b) Teaching parents to implement home learning<br>c) Coordinating community resources | Home-visitor | Parents of children enrolled in program<br>Children with suspected receptive and expressive communication problems as well as other developmental dysfunctions | Home-visitor<br>Lendable materials | Home-visitor |

several levels. The persons listed in Table 1 are ones who may need information relevant to the day-to-day operation of the program. They presumably allocate resources (people, materials, time, and money) at their level. For example, the home-visitor decides which families to visit on what day, at what time, bringing what materials, etc. The range of decisions that can be made is restricted to the particular sub-component and operates within higher level program constraints. The program director sets the latter constraints. He or she exercises resource allocation across program sub-components. To do so wisely and well, the director needs information about the operation and success of each of the sub-components. The information needed is not, however, at the level of detail that is required by the sub-component decision-maker. Above the program director may be a special education administrator. This person allocates resources across programs and hence needs information on program operations (again at a lesser degree of detail). The administrator is accountable to other levels of administration (e.g., funding source) and hence is required to provide a difference type of information. A full listing of decision-makers is required if the evaluation is to be designed and carried out to the satisfaction of all.

Evaluation priorities. To complete the evaluation mission profile two additional steps are required. Both involve consultation with the identified decision-makers. The first involves testing for the completeness of the profile that has been developed. In essence, broad consultation is sought to insure that: (a) everything that is to be evaluated is included; and, (b) nothing is included that is outside the realm of the program to be evaluated. Secondly, the decision-makers are consulted to assess the priorities for evaluation. Which sub-components are most critical to the evaluation of the program? Who are the decision-makers who must be satisfied with the information they receive?

This last step in the mission profile is important when allocating resources within the evaluation. That is, the evaluator, acting as the decision-maker for the evaluation, needs the information to determine where and how time, money, materials, and people should be spent. If resources are insufficient for full program evaluation, only top priorities can be included. This defines the scope of the evaluation.

### Performance Requirements

Performance requirements specify the "success state" for the evaluation and specify the "ground rules" for achieving the success.

General standards. The basic standards for a "successful" evaluation are that all necessary information is provided to the person(s) needing it, when they need it, in a form that they can use. That is, a successful evaluation is:

a. Complete--it provides all the data needed by all the decision-makers included in the scope of the mission profile.

b. Focused--it provides the information in relation to the priorities of the evaluation in a form that meets the decision-makers' needs.

c. Efficient--it provides only the data that will actually be used.

d. Timely--it provides the information at or before the time decisions must be made, and as often as is required.

Information requirements. Meeting the general standards of an evaluation obviously requires knowing what information is needed. In general, decision-makers usually need to know:

1. Have all conditions been met for the implementation of the program?
2. Has the program been implemented in accordance with the plans?
3. What are the impacts or outcomes of the program?
4. Are the outcomes reliable and consistent?
5. Can the outcomes be attributed to the program?
6. What is the cost of the program?
7. What is the cost/outcome ratio?

## Framework for Evaluation

There are several ways for framing an evaluation that meets the performance requirements and mission profile. The one recommended here is derived from Stake (1967) and is chosen because of its comprehensiveness. The framework provides both a truly detailed description of the program to be evaluated and a means for identifying and deriving the information required for all levels of decision-making.

Figure 1 illustrates the framework. To describe the program fully and to answer adequately the seven general evaluation questions most decision-makers want, twelve categories of data are needed. The data categories remain the same across program sub-components, although, of course, the specific data sources will be different. The types of analyses possible on these data categories are indicated by the arrows in Figure 1. Information for the "intended" dimension of the matrix is derived from consultation and discussion with the decision-makers in each sub-component.

## Data Categories

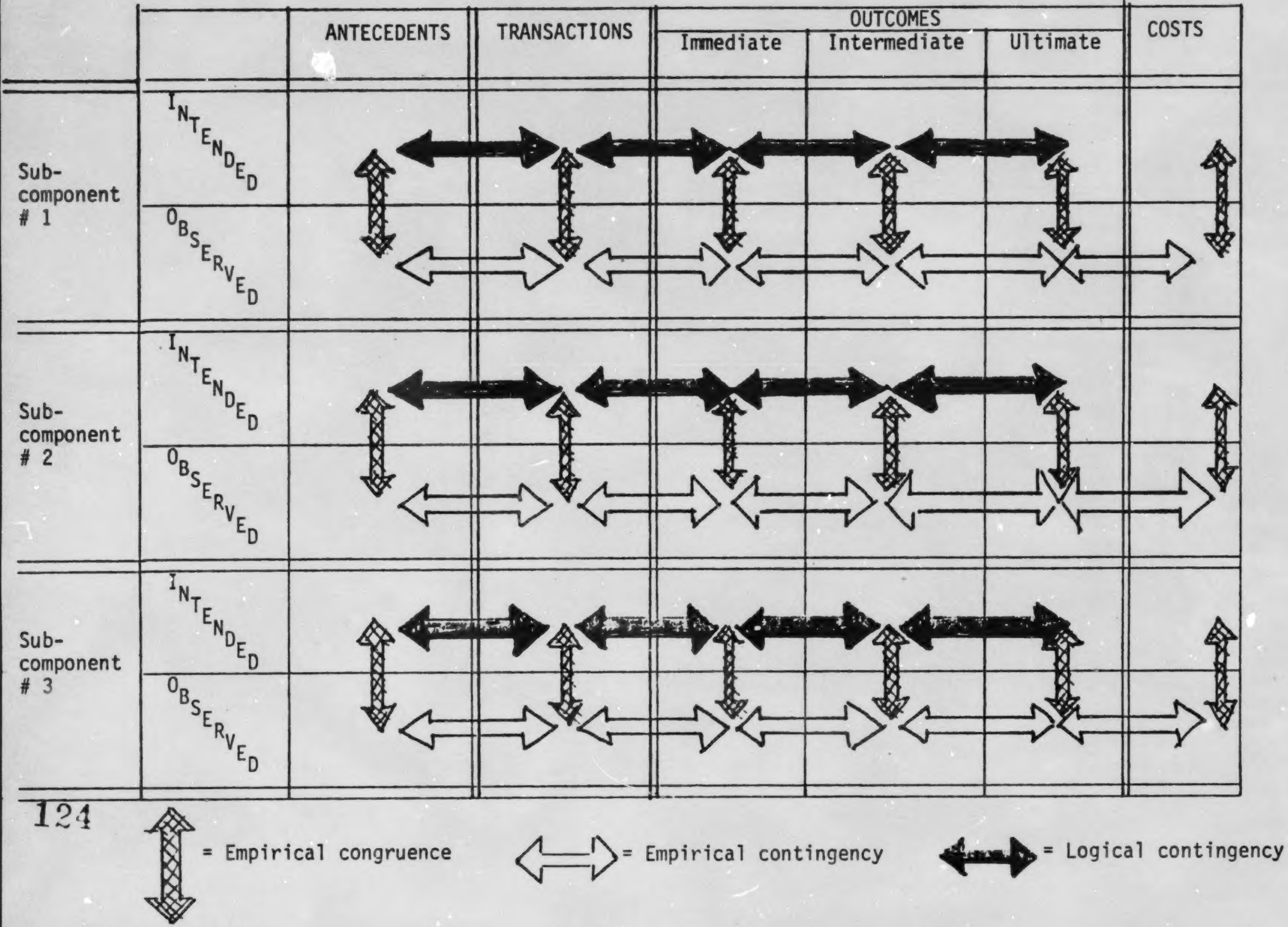
Intended antecedents. These are the prerequisites for implementation of the program--that which must be in place before the program can proceed. Examples are:

a. Staff: appropriate in number, training, and qualifications.

b. Clients: appropriate in personal characteristics and accessibility.

FIGURE 1

Framework for Evaluation


ANTECEDENTS
TRANSACTIONS
OUTCOMES
Immediate
Intermediate
Ultimate
COSTS
Sub-component # 1
INTENDED
OBSERVED
Sub-component # 2
INTENDED
OBSERVED
Sub-component # 3
INTENDED
OBSERVED
= Empirical congruence
= Empirical contingency
= Logical contingency

c. Resources: equipment, materials, facilities, in appropriate quantity and quality.

d. Time: in appropriate amount.

e. Rapport and support: an appropriate administrative and community context.

The list of intended antecedents is complete for a particular sub-component when all conditions have been included. The absence of any of the conditions would put the implementation or success of the program in jeopardy. The importance of each antecedent is an a priori judgement made during program planning.

Observed antecedents. This is the same listing of prerequisites, except that now an empirical verification of each item's existence or state is made. A data gathering procedure will be established to determine an empirical comparison of the desired state of affairs and the actual state of affairs to assess discrepancies. The data obtained provide an answer to the first general question of decision-makers. If a discrepancy exists, a formative decision must be made as how best to reduce or eliminate the discrepancy or, if that is not possible, a summative decision must be made--either to continue in the absence of an antecedent condition or to terminate the effort.

Intended transactions. These are the activities, interactions, or processes that define the uniqueness of the program. Examples might include the following:

a. Special activities (e.g., consultation visits, specialized assessments, and home visits), in terms of quantity (number and duration) and quality.

b. People interactions (e.g., staff/child interactions, child/child interactions, staff/staff interactions, and staff/family interactions), in terms of quantity and quality.

c. Environmental organizations (e.g., schedules, time allocations, interactions of staff, children, or parents with materials, and special therapeutic or prosthetic arrangements).

Again, these are based on a priori judgments of critical program characteristics made during the planning of the program. As indicated in Figure 1, there should be logical contingencies between the intended antecedents and the intended transactions. For example, for the desired number of staff/family transactions to occur during the program, there must be an adequate number of staff. For those transactions to have the characteristic quality desired, the staff must be adequately trained within the program rationale and have the skills the program requires.

Observed transactions. This involves the empirical verification that the program was implemented as planned. Again, data must be obtained to determine empirically the congruence between the desired activities of the program and the actual. The data obtained provide the information required for the second general evaluation question.

Intended outcomes. The statement of planned outcomes is best divided into three levels. This procedure serves to assure the desired level of specificity needed for measurement and formative decisions and yet preserves the future-oriented perspective around which most programs are planned.

1. Ultimate goals are long-range, future-oriented statements of desired end states for the target populations. Although such statements are focused on outcomes for the target population, they need not be strictly behavioral. Some examples would be the following:

   a. Establish patterns and expectations of success for a child that will create a sense of confidence for his or her future learning efforts.

   b. Increase the child's capacity to relate positively to family members, while at the same time strengthen the family's ability to relate positively to the child and his or her problems.

   c. Improve the child's mental processes and skills with particular attention to conceptual and verbal skills.

2. Intermediate objectives are those that have some probability or desirability of being attained within a fixed, but relatively long period of time (e.g., 3 months or half a year). Such objectives are expressed behaviorally (i.e., in terms of the target person's eventual capabilities) and provide a specification of the criteria for success. The following are examples:

   a. The child will be able to sign simple requests with sufficient clarity to be understood by his mother and teacher.

   b. The child's mother will require the child to sign requests with generally used and interpretable signs before complying with the request.

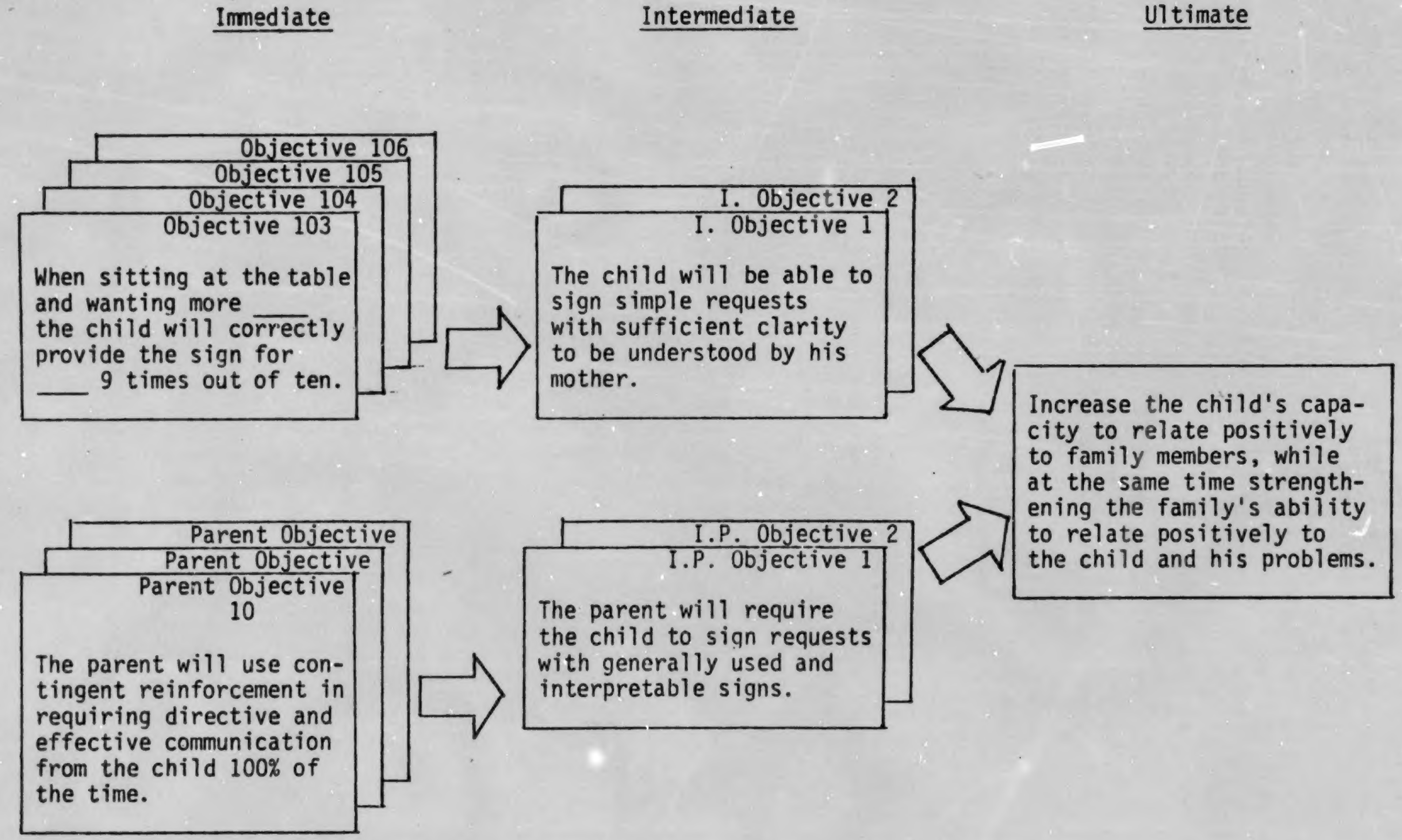
3. Immediate objectives are those that are to be attained within a relatively short period of time (less than three months) as the results of specific learning experiences. Such objectives: (a) are expressed in behavioral terms; (b) indicate the conditions under which the behavior is to occur; and, (c) specify a clear level of criteria for success. An example would be the following:

   a. When sitting at the table and wanting more (milk), the child will correctly provide the sign for (milk) nine out of ten times.

As indicated by Figure 1, there is an implied logical contingency among the three levels of objectives and goals. That is, there are a number of immediate objectives which, if attained, will yield the intermediate result desired. This result, in turn, when accomplished in conjunction with other intermediate objectives, will yield the ultimate goal (see Figure 2). This logical contingency becomes a set of hypotheses that are tested when data are collected.

FIGURE 2

Logical Contingency of Objective Levels


Immediate
Intermediate
Ultimate
Objective 106
Objective 105
Objective 104
Objective 103

When sitting at the table and wanting more ____ the child will correctly provide the sign for ____ 9 times out of ten.

I. Objective 2
I. Objective 1

The child will be able to sign simple requests with sufficient clarity to be understood by his mother.

Parent Objective
Parent Objective
Parent Objective 10

The parent will use contingent reinforcement in requiring directive and effective communication from the child 100% of the time.

I.P. Objective 2
I.P. Objective 1

The parent will require the child to sign requests with generally used and interpretable signs.

Increase the child's capacity to relate positively to family members, while at the same time strengthening the family's ability to relate positively to the child and his problems.

The alert reader will note that the order of definition of the level of objectives (ultimate, intermediate, immediate) is contrary to the ordering in Figures 1 and 2 and in the causal relation implied in the previous discussion. This is not simply an editorial choice. Rather, it reflects the nature of program planning--programs are initially conceptualized in terms of their ultimate goals--not their immediate objectives. The process of program planning is one of becoming increasingly specific, concrete, and operational. This process is equally applicable to designing a useful and efficient evaluation.

Measurement in evaluation is the process of assessing immediate and intermediate objectives. Few evaluations have the time or resources to assess ultimate goals. The recent reports by Lazar, Hubbell, Murray, Rosche, and Royce (1978) are a notable exception. For information to be useful for decision making, particularly for summative decisions, there must be endorsement and acceptance of the logical contingencies proposed. To that end, it is recommended that evaluation planning move (through the operationalization of fuzzy concepts; Jones, 1974) from ultimate goals to specific objectives.

This process of moving from the general to the specific does not preclude the use of curricular materials designed by others (e.g., CBIS). It does suggest that acceptance of objectives within such a curriculum is based upon acknowledgement of their validity for some desired ultimate ends.

Observed outcomes. The observed outcomes are the objectified and measured accomplishments of the program. The assessment of outcomes is usually the principal concern of evaluation. Decision-makers at the sub-component level are usually concerned with information at the level of immediate objectives. Higher level decision-makers usually require summarized data concerning intermediate or ultimate outcomes. An adequate measurement plan will insure that both kinds of information are provided when needed. The way to accomplish this will be discussed in more detail later.

The assessment of outcomes provides an answer to the third general evaluation question. Additionally, careful planning in the assessment of outcomes can provide an answer to the fourth and fifth questions. This planning involves the following:

a. Using reliable and valid measures.

b. Using multiple measures for the same outcome whenever possible within the resources of the evaluation.

c. Conducting replications.

d. Using comparison or control groups when possible.

e. Conducting analyses of the interrelationship of transactions and outcomes (that is, establishing the empirical contingencies involved).

The combination of using previously established measures and demonstrating that the obtained results (outcomes) are valid across measures and across repeated trials of the same program (e.g., across different schools or classroom groups) adds confidence that the results are reliable and consistent. Demonstrating that the outcomes are related to that which transpired in the program and that they are not obtained for groups who did not participate in the program provides convincing evidence that the program "caused" the outcomes. The combination adds validity to the conclusion that the program "worked".

Intended costs. This involves a complete listing of the resources available to the program, or that are supposed to be available to the program, converted to dollar values. Examples would include salaries of staff, space rental, equipment costs, and travel. It also includes volunteer hours converted to dollars, usually at minimum wage, the dollar value of donated equipment and supplies, and a proportional amount of rent and utilities for shared space.

Actual costs. Recording actual costs, by sub-component, includes all of the categories of costs listed above as well as any others that may be incurred during the program. All costs should be tracked and allocated to sub-components. Doing so obviously provides the answer to the sixth general evaluation question and when cross-referenced to the outcomes by sub-component, the answer to the last question is obtained.

## Measurement Planning

For many reasons, it is highly desirable to structure assessment procedures for all categories in the observed dimension of the evaluation framework (Figure 1). Emphasis on formal and precise assessment, under controlled conditions, insures the reliability and accuracy of the data obtained. Yet experience indicates that highly formalized procedures require extensive procedures, a major commitment of time, and the expenditure of large amounts of resources. Realistically, such procedures are seldom carried out in other than university research and demonstration settings. It is therefore more desirable and practical to design measurement procedures that will be used than ones that might be more elegant but will not be implemented. A measurement system that is too structured or cumbersome, one which takes too much time away from a teacher's or therapist's relation to the child or interferes with rapport, will not be used consistently. If it is not used consistently or at all, it is worthless, no matter how clever it is in design.

Therefore a system of measurement is needed that is:

a. Comprehensive, efficient, and focused.

b. Practical.

c. Easily interpretable.

This means that careful planning for data collection should be done. The more time spent in planning, the less the time and resources that will be necessary for actual collection, analysis, and interpretation of the data.

## Content of Measurement Plan

A basic measurement plan establishes which data are to be collected by whom and when. To be most useful, the information in the measurement plan should be cross-referenced to the overall evaluation format by sub-component. For example, a teacher may track a child's progress on the curriculum objectives daily, weekly, and monthly (immediate objectives) and file a report quarterly to the multiply handicapped, hearing impaired program coordinator. At the same time, the home visitor will track the child's progress through consultation with the parents (keeping records on the transactions that occurred as well as the parents' progress on selected parent objectives). At the end of a fixed period of time, a team conference will be held. Quarterly, semi-annual, and/or annual standardized testing results will be included if they are part of the evaluation plan. Progress toward intermediate objectives will be assessed, information on observed antecedents and transactions will be analyzed, and costs will be tallied. Based on these data, and their interpretations, the child's individual educational plan and the family's individual plan will be updated, intervention strategies will be analyzed and reviewed if necessary, and overall progress of the program will be determined.

## Basic Rules

Within the evaluation, all measurement is directed toward completing the "observed" side of the framework pictured in Figure 1. Each category within that framework, and each sub-part within each category, is associated with a "measure". When selecting the appropriate measures, there are several basic rules to keep in mind.

1. Whenever possible, have data collection a part of the usual routine of all program staff rather than the exclusive domain of the evaluator. For many purposes, informal assessment procedures are quite adequate, and may actually be preferred over more formal ones. The alert teacher, therapist, or home visitor has many more opportunities to observe and assess the attainment of immediate objectives during the teaching, therapy, or home-visit session than he or she would during a formal assessment procedure. There must be a precise understanding of the objectives to be attained and the criteria of success. Alert observation and a record-keeping system (such as that which is a part of the CBIS curriculum) are required.

2. Use the most direct measure available--measures that require little or no inference are preferred over those that require much (e.g., attendance and participation data are preferred over more esoteric indices of motivation). The meaning of such data is more easily communicated and is, therefore, more likely to be used in decision-making.

3. Select methods that are easily coded for data analysis over those that require several steps of data processing (e.g., use fixed-choice questionnaire items instead of open-ended questions, if possible).

4. If more elaborate measurement procedures are required, select well established tests and measures rather than constructing new ones.

5. Select ecologically valid measures instead of more contrived ones whenever possible. Ecologically valid measures are those which tap a person's everyday behavior within commonly experienced settings (e.g., direct observation is preferred over pencil and paper tests).

6. Choose two or three short but reliable measures obtained through different modes of data collection instead of one longer measure obtained by one means from one person. When it is possible to do so, the reliability of assessment can be improved by having more than one assessor. When making choices, shared judgment is preferred over individual judgment (e.g., a brief classroom observation by the evaluator and a teacher rating of social behavior are preferred over a lengthy interview).

### Monitoring Data Collection

Care must be taken to insure that the measurement plan is implemented as planned. Monitoring the data flow is essential. Depending upon the size of the program, some missing data may be tolerated, but not large quantities. The evaluator or evaluation staff is responsible to see that all personnel are appropriately executing the data gathering assignments that they have been given in the measurement plan. A series of systematic checks is required to assure the reliability, validity, and timeliness of all data.

## Report Format

As previously indicated, an evaluation is only successful if the information it provides is used in decision-making. The evaluator must provide the information in a form that will (a) gain the attention of decision-makers and (b) be understood by them. Knowing something of the administrator/decision-maker role is important.

### Administrative Role and Style

Although administrators are not all alike, their differences are usually differences of style instead of role. That is, a number of commonalities are found in administrative roles. Cox (1977) suggests the following commonalities:

1. Most administrators work at an unrelenting pace.
2. Their work activity is characterized by brevity, variety, and fragmentation--they seldom have large blocks of time to devote to one aspect of their job.

3. Their work generally focuses on the concrete; they rarely are concerned with abstract discussions.

4. A major portion of their responsibility is to serve as an active communication link between various levels of staff, administration, and relevant outsiders.

## Presentation Guidelines

The implications of the nature of the administrative role for the evaluator are clear. The evaluator must realize that the evaluation data provided will probably never be the sole source of information used in decision-making, but the degree of importance it has depends upon how it is presented. The following guidelines are suggested:

1. Evaluation results need to be presented in specific, concrete, and focused terms. The results presented must be oriented toward the specific questions that are of interest to the decision-maker.

2. The results need to be presented in unambiguous terms. Qualifications concerning the rigor or validity of findings should not obscure the meaning of the data.

3. Frequent reporting of less complex data is more effective and useful than a one-shot report of overall findings.

4. Negative outcome findings, presented in the absence of meaningful antecedent and transaction data, are not very helpful. Such data need to be couched in terms of required program revisions.

5. Results, even if incomplete, need to be presented at the time they will be useful. Data presented after the fact are irrelevant.

6. Finally, many administrators prefer a verbal report to a written one (though written back-up should be provided for hard copy storage and future reference).

## Decision-Maker Involvement in Planning

If the decision-makers who are to be presented with the information have participated in establishing the evaluation framework and have agreed to the scope of the evaluation, the chances are greater that the evaluation information presented will be relevant and used by them. The entire evaluation effort must be construed as a service to the decision-makers. It should be their evaluation, not the evaluator's.

The steps outlined in the following evaluation triptik, if carried out in conjunction with the various levels of decision-makers previously described, will insure that there is this shared sense of relevance.

## Evaluation Triptik

The following is a step-by-step guide for program evaluation planning.

1.0 ORIENTATION. Orient program staff to the nature of evaluation for formative and summative decision-making. Solicit cooperation.

2.0 MISSION ANALYSIS. Define the scope of evaluation.

2.1 Mission Profile. Define that which is to be evaluated and for whom.

2.1.1 Form a global program definition. Include:

a. broad purposes
b. target populations
c. resources
d. timetable

2.1.2 Identify the sub-components of the program.

2.1.3 Identify the decision-maker for each sub-component.

2.1.4 Formalize the program definition, sub-component, and decision-maker listing.

2.1.5 Prioritize sub-components.

2.1.6 Prioritize decision-makers across and within sub-components.

2.1.7 Set evaluation priorities. This involves answering questions such as:

a. Who are the most critical decision-makers?

b. Where can the evaluation data have the greatest impact?

c. Are there external (outside the program) information requirements?

d. Are there internally imposed constraints?

2.2 Performance Requirements. Define criteria for evaluation.

2.2.1 Define timetable for information needs.

2.2.2 Define information requirements.

2.3 Identify Evaluation Resources. Analyze the resources available for the evaluation effort.

2.3.1 Specify free-standing resources--i.e., money, staff, space, equipment exclusively available to the evaluation.

2.3.2 Specify shared resources--i.e., persons, equipment, space, etc., that may be utilized cooperatively by the evaluation staff.

2.4 Assess Realistic Possibilities

2.4.1 Cross-reference priorities (sub-components and resources).

2.4.2 Cross-reference priorities (decision-makers and resources).

2.4.3 Define scope of activities--priorities within performance requirements and resources.

2.5 Acquire Confirmation on Scope of Evaluation.

## 3.0 ESTABLISH PROGRAM INTENTIONS

3.1 For first (highest priority) sub-component, develop a full statement of intended antecedent conditions.

3.1.1 Get statements of all conditions that are considered desired or essential for implementation of sub-component.

3.1.2 Get statements of all conditions that would be considered detrimental to or disastrous for implementation of sub-component. (Here, the evaluator is seeking an opinion on what factors would be considered handicapping conditions for the sub-component. The paired--essential/detrimental--process helps to insure that the list of antecedents is complete.)

3.1.3 Prioritize "essential" antecedents from most important to least important. (As with other prioritizing efforts, if resources are short, top priority items only will be included in the assessment of "observed" conditions.)

3.2 For the first (highest priority) sub-component, develop a full statement of the intended transactions.

3.2.1 Get statements of all conditions considered critical to the "character" of the sub-component.

3.2.2 Get statements of all conditions considered "badly out of character" for the sub-component.

3.2.3 Prioritize essential transactions.

3.3 For the first (highest priority) sub-component, gain a full description of intended outcomes (immediate, intermediate, and ultimate).

3.3.1 Begin with ultimate goals.

3.3.1.1 Obtain a list of goal statements.

3.3.1.2 Prioritize

3.3.2 For top priority goal statements, operationalize goals into behavioral terms for "fixed-time" outcomes (intermediate objectives).

3.3.2.1 Obtain a list of intermediate objectives for the first goal.

3.3.2.2 Prioritize.

3.3.3 Repeat for each goal statement.

3.3.4 For the top priority intermediate objective (for top priority ultimate goal), operationalize into specific objectives for short-term learning experience (immediate objectives).

3.3.4.1 Obtain a list of immediate objectives.

3.3.4.2 Prioritize.

3.3.5 Repeat for each intermediate objective within each goal.

3.3.6 Assess the validity of the sub-component outcomes at the three levels (i.e., their connections and correspondence). This includes asking and answering such questions as:

a. Do the immediate objectives adequately represent the intermediate objectives?

b. Do the intermediate objectives adequately represent the ultimate goals?

3.4 Repeat for each sub-component of the program.

4.0 ESTABLISH A MEASUREMENT PLAN

4.1 Determine existing and/or routinely gathered data sources. (e.g., attendance data is routinely gathered by all schools. Most ongoing educational enterprises have existent testing programs. Such data may be economically used in the evaluation effort as well.)

4.2 Determine data that program staff may routinely gather without interference with their regular responsibilities.

4.3 Cross-reference data sources with data needs from "observed" categories of the evaluation framework.

4.4 Determine unmet data needs--cross-reference with information requirements.

4.5 Select additional measures to meet data needs and information requirements.

4.6 Set up a plan for data collection, assigning specific responsibilities to individuals and time lines for completion.

4.7 Review overall plan to insure all performance requirements are met and all priority needs are satisfied.

5.0 SET REPORTING GUIDELINES

5.1 Determine decision-maker style and preferences for reporting.

5.2 Establish procedures for data analysis, summarization and reporting to meet performance requirements and decision-maker preferences.

6.0 IMPLEMENT EVALUATION PLAN

6.1 Include a continuing formative evaluation of the evaluation--modify plan as needed to insure performance requirements are met.

## References

Cox, G. B. Managerial style: Implications for the utilization of program evaluation information. Evaluation Quarterly, 1977, 1 (3), 499-508.

Jones, L. A methodological approach to evaluation. In R. Colum & E. Zaffiro (Eds.), Preschool education: A handbook for the training of early childhood educators. New York: Springer, 1974.

Lazar, I., Hubbell, V., Murray, H., Rosche, M., & Royce, J. The persistence of preschool effects. Washington, D.C.: Office of Human Development Services, 1977.

Stake, R. The countenance of educational evaluation. Teachers College Record, 1967, 68, 523-540.

## Multiply Handicapped Deaf Children:

## An Annotated Bibliography

The following annotated bibliography is the product of the efforts of students in a seminar on multiply handicapped deaf children at the Communication Disorders Program at The Pennsylvania State University in the summer of 1979. It is not intended as an exhaustive list of materials available in the areas indicated, but simply reflects sources uncovered by students as they explored various aspects of this topic. The bibliography is presented here for the benefit of those using this handbook who might wish to seek other sources of information for application with their programs.

### The Current Status of Services Offered to the Multihandicapped Deaf Children

Ballard, J. Z. Public Law 94-142 and Section 504: What they say about rights and protections. Journal of Exceptional Children, 1977, 44, 177-184.

The history, basic content, and current status of implementation of these two landmark laws are discussed. The authors point out that despite irregularities in the implementation of these laws, as a result of them handicapped children are receiving more services.

Flathouse, V. E. Multiply handicapped deaf children and Public Law 94-142. Exceptional Children, 1979, 45, 560-565.

The author maintains, that despite the passing of P.L. 94-142, there exists a population of handicapped children who are not adequately served because of their diverse disabilities. This population is that of the multiply handicapped deaf. There are problems identifying these children because of the lack of trained staff and financial commitment. Once these children are found there is the difficulty of defining the type and degree of the handicapping conditions and how these disabilities interact. Very often the services for them are minimal or non-existent. The author emphasizes the importance of early identification and effective programming.

Hall, S. M., & Conn, T. F. Current trends in services for the deaf retarded in schools for the deaf and residential schools for the mentally retarded. Proceedings of the Forty-Fifth Meeting of the Convention of American Instructors of the Deaf, 1971, 115-118.

This report presents the results of a national survey (1971) to determine the extent and general focus of programs available for deaf retarded persons. The basic results found were that nearly nine times more deaf mentally retarded students are at facilities for the retarded than are at schools for the deaf.

Weir, R. C. Impact of the multiple handicapped deaf on special education. *Volta Review*, 1963, *65*, 287-289, 325.

This article provides a general overview of the field of education of the multiply handicapped deaf. It is a brief but informative introductory discussion of the subject. Following a discussion about the increasing numbers of multiply handicapped deaf children, the article addresses the improvements and adjustments that must accompany this increase. The discussion includes necessary equipment, facilities, personnel, services, research, and teacher training.

## Programming Considerations

Burrows, N. L., & Lloyd, L. L. Programming considerations for the deaf retarded. *Proceedings of the Forty-Fifth Meeting of the Convention of American Instructors of the Deaf*, 1971, 105-114.

The authors of this article present a general picture of mentally retarded deaf children, including their unique characteristics, the different levels within the population, and their special needs, many of which are not being met. The authors state that there are too few programs established, no specific program objectives, and too few adequately trained teachers.

Programming considerations are discussed, including audiological assessment, psychological evaluation, developmental curriculum adapted to each different level of ability and early communication programming using a total communication approach. The paper emphasizes the great need for systematic research to guide educational practice in programming for deaf retarded children.

Lennan, R. K. Administrative considerations in educational programming for multi-handicapped deaf children. *Proceedings of the Forty-Sixth Meeting of the Conference of Executives of American Schools for the Deaf*, 1974, 20-49.

The author discusses several considerations for programming for this population, including the need for services, terminology, defining the population, admissions, and selection and utilization of teaching staff. Also discussed are administrator/teacher relations, curriculum planning, behavior management techniques, and storage and retrieval of materials.

Schein, J. D. Deaf students with other disabilities. *American Annals of the Deaf*, 1975, *120*, 92-99.

Various problems in the field of education of the multiply handicapped deaf are discussed, including difficulty in diagnosis and lack of sufficient facilities, services, and teaching personnel. Emphasis is placed on teacher training and curriculum development.

## Placement and Programs for the Multiply Handicapped Deaf

Arkell, C. Educational programming for multiply involved deaf students. The Volta Review, 1979, 81, 25-39.

A detailed and practical description of educational programming for multiply handicapped, deaf children is given, based upon a public schools program in Albuquerque, N.M. Topics include assessment, identifying target behaviors, writing instructional objectives, design of programs, and evaluation.

Bent, M. T. The older atypical deaf child: A program. American Annals of the Deaf, 1975, 121, 478-479.

A description of the program at St. Mary's School for the Deaf in Buffalo, N.Y., is given. The program involved the entire school staff and included three divisions--major courses, supplemental courses, and vocational courses. Each division is sequenced into five levels to develop life skills in older multiply handicapped deaf children.

Brannan, A. C., Sigelman, C., & Bensberg, G. J. The hearing impaired in state institutions for the retarded: II. Services and programs. American Annals of the Deaf, 1975, 120, 502-508.

A mail survey of state institutions for the mentally retarded was taken to obtain information on the service and programs available for hearing impaired residents of that institution. Findings revealed that less than half of the reporting facilities have distinct programs for the hearing impaired/mentally retarded (HI/MR) residents and almost none of them placed the HI/MR in separate living quarters. A variety of approaches were used from one facility to another in terms of therapy, instruction, and communication.

Carruth, K. J., et al. An educational model for hearing impaired mentally retarded adolescents. Journal of Rehabilitation of the Deaf, 1979, 12, 1-7.

The authors describe a model program for high school vocational training of mentally retarded deaf students at the Cooperative School Rehabilitation Center in Minneapolis. This project demonstrated effectiveness in providing educational alternatives for these students within the framework of a program designed for traininable and low level educably retarded students.

Colella, H. V. Public school placement: A viable alternative for deaf emotionally handicapped children. In D. Naiman (Ed.), Needs of Emotionally Disturbed Hearing Impaired Children. New York: New York University, 1975.

The Nassau BOCES (Board of Cooperative Educational Services) program is one of the first attempts to educate multiply impaired deaf children in the public schools. At the time of publication, 15 children (ages 5-19) were enrolled in the program. Each of these children had two or more significant limitations in coping skills or functioning abilities. Educational assessment indicated retardation of 2 to 9 years, which increased with age. After three years in the program, it was found that social, behavioral and academic progress is attainable at some level for all of the children involved in the study.

Feldman, L. A work-study program. In D. Naiman (Ed.), Needs of Emotionally Disturbed Hearing Impaired Children. New York: New York University, 1975.

This paper discusses a work-study program for young adult hearing impaired students in New York City. Many of the students are severely emotionally handicapped and have serious adjustment problems. The goal of the program is to help the students function independently in an adult world. The program provides a learning atmosphere which is non-threatening and supportive. The classroom instruction varies and is life and work oriented. An integral part of the program involves placement in part-time work situations to give them work experience.

Hagg, R. F. A residential program for deaf multi-handicapped children. American Annals of the Deaf, 1978, 123, 475-477.

A residential program for deaf multi-handicapped students has been developed at California School for the Deaf, Riverside. This report described the comprehensive program which included the following: the type of students served, the school itself, staff distribution, student assessment, the "Student Profile", progress reports, lesson plans, recreational activities, teacher/counselor relations, and communication with parents.

Hall, M. & Talkington, L. Evaluation of a coordinated programming effort for deaf retarded. Journal of Rehabilitation of the Deaf, 1975, 6, 41-44.

This paper reports the results of a 12 month continuous training effort of 36 male residents in a public facility for the mentally retarded. The program progressed through four phases of development. Specific attention was given to changes observed on various functional and social areas. In addition, an evaluation of manual communication training was studied by way of a matched control design. The present study supported earlier findings that deaf mentally retarded individuals can comprehend and utilize manual sign communication.

Hall, M. & Talkington, W. Trends in programming for the deaf mentally retarded in public residential facilities. Mental Retardation, 1972, 10, 50-53.

The present report was conducted to determine the extent and type of programs available for deaf mentally retarded (DMR) individuals in state public residential schools for the deaf and public institutions for the mentally retarded. Findings revealed that nearly nine times as many DMRs were residing in facilities for the mentally retarded as in schools for the deaf. A lack of personnel trained to work with both handicaps of deafness and retardation was apparent.

Herman, G. et al. Child Based Information System (CBIS). Central Susquehanna Intermediate Unit, Box 213, Lewisburg, PA 17837, 1979.

The CBIS is a computerized procedure that serves as a guideline for instruction and presents a basic answer to the question, "What should I teach next?". It also offers a way to record student progress and maintain permanent records. Teachers, parents and administrators have access to a global view of the child's accomplishments and present objectives, and they can see what teaching objectives are to follow. In addition, a strategy bank of educational techniques, proven to be effective in teaching specific CBIS objectives, is available for the teachers.

Hyde, S. & Engle, D. The Potomac Program: A Curriculum for the Severely Handicapped Deaf, Hearing Impaired, Non-verbal. Beaverton, Oregon: Dormac, Inc., 1977.

This curriculum for the severely handicapped deaf, hearing impaired, and non-verbal is designed to train for specific skills and encourage students to solve problems and create order. An academic approach is used to emphasize cognitive skills which will prepare the student to learn all necessary basic life skills, job skills, and/or more difficult conceptual skills. The only required entry behavior is attendance to task. The eight sections of the curriculum are structured with small teaching steps and include matching, categorization, sequencing, gross motor skills, fine motor skills, sign language, introduction to hearing aids and auditory training, and introduction to speech. Every section includes the following elements: flow charts, behavioral objectives, sub-objectives (teaching strategies), activities, explanatory illustrations and evaluation sheets.

Ives, L. A., & Morris, T. The creation and subsequent development of a diagnostic and advisory center for hearing-impaired pupils with particular reference to the multiply handicapped. Teachers of the Deaf, 1978, 2, 61-65.

In 1974 Ives completed a survey of multiply handicapped deaf children. From this study, came a number of recommendations with regard to diagnostic facilities, school provisions, teaching, teacher training, and research. In 1977, a unit inclusive of all stated suggestions was established. It was called the Rycroft Center. The article discusses the policies and procedures of the Center and the current trends of multiply handicapped education in England.

Kent, L. R. Language Acquisition Program for the Retarded or Multiply Impaired. Champaign, Ill.: Research Press, 1977.

This teaching manual presents the Language Acquisition Program for severely mentally handicapped children and the adaptation to deaf sign for aurally handicapped children. Sequential, detailed teaching activities based on reinforcement theory to be used by a trainer with two children are provided in three major sections: pre-verbal, verbal-receptive, and verbal expressive. Two tables cite information to aid the trainer to keep program sequence and determine criterion and non-criterion tasks. An inventory to determine a child's entry point and to assess development is included.

Langdon, M. A. The multiply handicapped in a working world. The Volta Review, 1964, 66, 504-507.

This article describes a special program initiated for five multiply handicapped deaf students at the Clarke School for the Deaf. Included are a description of the students, the program's goals, a synopsis of the curriculum, practical training exercises, and a follow-up of the work experiences of the graduates in the program.

Lennan, R. K. The deaf multi-handicapped unit at the California School for the Deaf, Riverside. American Annals of the Deaf, 1973, 118, 439-445.

This article describes a self-contained unit which provides a basic educational program for children from 5½ to 18 years of age. The article describes the physical facilities, instructional program, curriculum, planning guidelines, evaluation of pupil progress, instructional materials (teacher-made), classroom organization, classroom management (complete behavior modification program), dormitory behavior modification program, inservice training for teachers and parental involvement.

Lynch, L. & Tobin, A. The development of language-training programs for postrubella hearing-impaired children. Journal of Speech and Hearing Disorders, 1973, 38, 15-24.

The article presents the procedures developed and used in planning the individual therapy programs for a group of preschool, postrubella, hearing-impaired children. A case study illustrates the systematic manner in which the clinician plans programs for each child on the basis of the child's progress in the program. The clinician plans remediation in terms of: (1) choice of mode(s) for the child and the teacher to use; (2) the basis for selecting target behaviors; (3) establishing base line for measuring progress; and (4) providing a scientific basis for future planning.

Millham, J., Fannin, A., Brewer, D., & Caccamise, F. A program for mentally-retarded deaf children and their families. Journal of Rehabilitation of the Deaf, 1974, 8, 43-57.

This paper describes a program developed to meet the needs of multiply handicapped deaf children in Houston including staff and facility needs, the children's educational needs, and the needs of the children's families. Detail is given through discussion of the language and conceptual training program and family communication training. The program, methods, results and impressions are discussed honestly, showing the areas of failure as well as success.

Monaghan, A. Educational placement for the multiply handicapped hearing impaired child. The Volta Review, 1964, 66, 383-387.

Possible placements are discussed for hearing impaired children with visual problems, mental retardation, emotional disturbance and physical disabilities. In lieu of improved methods of objectively evaluating these children, diagnostic teaching is suggested as an adequate way to place a child and design a program according to his needs.

Naiman, D. W. Educating severely handicapped deaf children. American Annals of the Deaf, 1979, 124, 381-396.

A detailed description is given of a program for 30 multiply handicapped deaf children in a public day school in New York City. Included are prescriptive assessment methods and the use of the Social Learning Curriculum. Parental involvement is an integral part of this program. Data on student progress during the first year of the project is given.

Northcott, W. H. Curriculum Guide: Hearing Impaired Children (0-3) and Their Parents. Washington, D.C.: Alexander Graham Bell Association for the Deaf, Inc., 1977.

Although this curriculum is specifically designed for the children and parents of deaf children, many of the ideas and procedures can be adapted to fit the needs of the multiply handicapped deaf child and his parents. The guide is a good source of basic activities to use with a handicapped child and describes the components of a comprehensive infant program for hearing impaired children 0-3 years of age and their parents. Primary focus is upon a home-centered, parent-guided, natural language approach to learning, based upon the child's daily activities. This focus could easily be adapted to a residential setting. An interdisciplinary professional staff guides the caretakers in the individually prescriptive program.

Peterson, B., & Schoenmann, S. *Building Blocks for Developing Basic Language*. Beaverton, Oregon: Dormac, Inc., 1977.

This language curriculum has been developed specifically for multiply handicapped deaf individuals. It is a revision of the curriculum originally used in the California School for the Deaf-Riverside, which has a deaf multiply handicapped unit. The curriculum is primarily based on the Apple Tree sentence patterns used in combination with the color coded Fitzgerald Key. Although it was developed for multiply handicapped deaf students, this curriculum provides the teacher of the deaf with a task analysis approach to teaching language, which can be applied to any deaf group. Readiness skills necessary for entry into the program are outlined. Suggested vocabulary lists divided into four levels of comprehension or ability are included. After mastering the vocabulary at each level, the child begins the language pattern section of the curriculum on that same level. Included are criteria for advancement through the curriculum.

Rice, B. D., & Milligan, T. A structured approach to independent living training for young, multiply handicapped, deaf adults. *Journal of Rehabilitation of the Deaf*, 1973, *6*, 38-42.

This article describes the Independent Living Training developed at the Hot Springs Rehabilitation Center in Arkansas. Details are given as to the means used to try to help deaf clients move from a sheltered living environment to independent community living, including classroom instruction and practical experience.

Sitnick, V., Rushmer, N., & Arpan, R. *Parent-Infant Communication*. Beaverton, Oregon: Dormac, Inc., 1978.

This curriculum relates primarily to the infant's acquisition of communication skills. The areas that are covered are skill development in auditory perception, receptive, and expressive language; curriculum for use with infants (hearing impaired); curriculum for use with parents of hearing impaired infants to enhance the child's acquisition of auditory and language behaviors.

Zwick, L. G. Life adjustment program at the Rochester School for the Deaf. In D. W. Naiman (Ed.), *Needs of Emotionally Disturbed Hearing Impaired Children*, New York: New York University, 1975.

A discussion is given of the efforts at the Rochester School for the Deaf to meet the needs of children with multiple problems at the Advanced Secondary Level. Included is a description of the Life Adjustment Goal development to help those who cannot benefit from regular classroom instruction to become independent or semi-independent adults.

## Activities for the Multiply Handicapped Deaf

Adams, R. C., Daniel, A. N., & Pullman, L. Games, Sports and Exercises for the Multiply Handicapped. Philadelphia: Lea and Feliger, Inc., 1972.

The need for and interest in play, recreation and social activities involving the multiply handicapped individual is presented in a very practical format. Coordination of recreational activities with treatment programs is discussed. This book emphasizes the need for gross motor activities in the everyday life of the handicapped child and adult. Also, general characteristics of the handicapped child and medical problems encountered in the public schools and hospital settings are emphasized to provide understanding of the problems that are involed in regular and special education teaching. A listing is supplied that tells the instructor where the special equipment, special materials, and/or special instructional techniques can be obtained. The authors concentrate on actual programs, procedures and equipment. Much of the material is centered chiefly on the adaptation and application to suit major group needs. Most of the adaptive devices were designed by the authors and have been tested in practical situations.

Anderson, F. E. (Ed.) Art for All the Children. Springfield, Ill.: Charles C. Thomas, Inc., 1978.

This seven chapter book suggests practical ways in which the arts can facilitate the total educational, emotional and physical development of the handicapped child. The usefulness of the text is demonstrated by the book serving as both a training book and a resource book. Emphasis is placed on the ways in which art can enhance the impaired child's communicative and cooperative skills, improve his self-concept, and allow him to express and affirm himself in a creative manner.

Specific adaptations for each of the major impairment categories (learning disabled, behaviorally disturbed, hearing impaired, visually impaired, mentally retarded, physically handicapped and multiply handicapped) are suggested in connection with every art activity presented. Chapters concern themselves with planning art activities for exceptional children, instilling a sense of self through art and integrating art into a curriculum that includes mathematics, science and social studies. Puppetry, photography, print-making, dyeing activities, and working with fibers are some of the specific art activities presented.

Eaton, P., & Eiring, L. Joy of Learning. Beaverton, Oregon: Dormac, Inc., 1976.

Designed for deaf multiply handicapped children, this book includes activities in the areas of language and mathematics. Each activity is accompanied by a photograph of the easy-to-make materials for use with every activity. Included in each description are the objective of the activity, variations, and materials needed.

Foster, E., Levy, J., & Cullison, S. *Let the Sunshine In, I and II.* Silver Spring, MD: National Association of the Deaf, 1972.

Social training, time, and money categories are selected by the authors as areas of learning that are important to developing life skills. These areas have been incorporated into each of the eleven units of study. A Total Communication approach to learning is emphasized throughout the units. Each unit is preceded by instructions for the teacher with suggested field trips and practical activities. The authors stress that these units must be taught along with real life experiences for meaningful learning to take place. A typical workbook page includes pictures with corresponding illustrations of signs and fingerspelling, the printed word, and spaces for copying the word. Appendices include lists of reference books and materials useful for teaching time, money, safety, and social skills.

*Learning Steps*. Sacramento, California: Office of State Printing, 1976.

This handbook for persons working with deaf blind children in residential settings includes general suggestions, specific teaching activities, and an introduction to sign language. It is explained that the book is based on the John Tracy Clinic Correspondance Learning Program for Parents of Preschool Deaf Blind Children. General suggestions are provided for topics such as setting goals and encouraging independence, and for dealing with the child's sight, hearing, health, discipline, language, and play. A major portion of the program consists of specific activities and illustrations for teaching the following skills: body movement, eating, dressing, toilet training, personal hygiene, and play. Basic signs are introduced with each activity, and the final section of the program contains illustrations of the manual alphabet and more than 120 signs.

Watson, M. J., et al. *A Practical Guide to Prevocational Activities for Deaf Blind Children*. Hartford, Connecticut: Oak Hill School, 1974.

Prevocational activity in this booklet is defined as that which exposes the child to tools, materials, skills, concepts, and sequential procedures which will enhance the development of the child's curiosity, abilities, creativity and feeling of self worth. The goal of the booklet is to introduce the handicapped child to experiences which the normal child naturally encounters. It is divided into two sections: (1) basic concepts, in which vocabulary words are illustrated with signs and goals and techniques specified; and (2) suggested activities, which is divided into arts and crafts, business education, home and personal management, and industrial arts.

## Communication Interventions

Feery, P., & Cooper, J. Sign language in communication disorders of childhood. Journal of Pediatrics, 1978, 93, 547-552.

Sign language, as used by the deaf, is encouraged as an alternative means of communication by children who are autistic, cerebral palsied (if they have the muscular control), mentally retarded, deaf, or have any combination of disorders. The authors are particularly supportive of total communication, citing the increase of its use in schools today. They advocate the use of total communication as an effective method of communication, then present roles of the pediatrician, the parents, and the places of education in the management of the program for the child.

McDonald, E., & Schultz, A. Communication boards for cerebral palsied children. The Journal of Speech and Hearing Disorders, 1973, 38, 73-88.

The authors explain the need for communication boards with cerebral palsied children, explain the indications and considerations and present some types used. They give ideas for construction and specifically relate the role of others in the child's environment. A case study supports their recommendations for communication boards for the cerebral palsied. These boards can be readily adapted for use with the multiply handicapped child.

## Audiological Aspects

Christensen, N. J., & Schlanger, B. B. Auditory training with the mentally retarded. Mental Retardation, 1964, 2, 290-294.

A program of 30 auditory training activities is presented for improving the listening skills of mentally retarded children, originally diagnosed as being hearing-impaired. The rationale for listening training is included in the article.

Fulton, R. T., & Giffin, S. Audiological-otological considerations with the mentally retarded. Mental Retardation, 1967, 5, 26-31.

The purpose of this paper is to discuss the structure and content of an audiological-otological program in an institution for the mentally retarded. Data on the incidence of hearing loss, types of losses, subject descriptions of pathological referrals, types of pathology and surgical intervention, and pathological anomalies are represented in support of establishing comprehensive audiological-otological programs. The findings of the report show that the retarded indicate an abnormally high incidence rate of hearing loss. The number of individuals requiring treatment may be caused by the inability of the retarded to seek otological attention during the early stages of the pathology.

Lloyd, L. L., & Cox, B. P. Programming for the audiological aspects of mental retardation. Mental Retardation, 1972, 10, 22-26.

The paper summarizes the factors indicating hearing impairment as a major problem in mental retardation and presents practical guidelines for programming to meet the audiological needs of the retarded. Audiological programming is discussed in terms of five areas of activity: audiological assessment, otolaryngologic examination (and habilitation), aural rehabilitation, and general administrative considerations. The guidelines are consistent with the new AC/FMR standards for residential facilities, but are applicable to nonresidential programs.

Lloyd, L. L., & McCoy, D. F. A hearing aid orientation program for mentally retarded children. Training School Bulletin, 1967, 64-65, 21-30.

This article describes a Hearing Aid Orientation Program (HAO) for new hearing aid users who are mentally retarded. The program is divided in sequential steps for the necessary skills needed to care for and use the aid. the HAO Program was designed for children ages 8-16 with mild to severe hearing losses, using body aids. The program assumes that an audiological evaluation has taken place, that the child has potential to use the amplification, and that auditory training will be conducted concurrently with the HAO program. This program is designed for use in a residential setting where the cottage personnel are the key personnel.

## Etiologies

Chess, S. Behavior and learning of Rubella children. In D. Naiman (Ed.), Needs of Emotionally Disturbed Hearing Impaired Children. Naiman, D. W. (Ed.), New York: New York University, 1975.

The author examined the percentage of children with behavior disorders in a sample of 210 children. Children with single and multiple handicaps were included. It was found that there was a higher percent of behavior problems in children with multiple handicaps and that percentage increased as the severity of the hearing handicap increased. The study indicates that there is a high prevalence of autism in Rubella children and that diagnosis with this group is extremely difficult. Therefore, it is suggested that a new set of norms be established specifically for these types of children which will prevent misdiagnosis.

Flower, R. M., Viehweg, R., & Ruzicka, W. R. The communicative disorders of children with kernicteric athetosis: 1. Auditory Disorders. Journal of Speech and Hearing Disorders, 1966, 31, 41-59.

Various performances related to auditory function were assessed in: (a) 15 children with kernicteric athetosis and apparently reduced auditory sensitivity; (b) 15 athetoid children with normal hearing; and (c) 15 hearing-impaired children with no central nervous system dysfunction or history of parental Rh incompatability. Histories received by the parents suggested the kernicteric athetoid children had hearing losses that were recognized later in life than the other group of children with hearing losses.

This paper discusses clinical and educational implications for kernicteric athetoid children with auditory impairments. Although these children performed essentially the same as children with any similar impairment of sensitivity, other factors such as neuromuscular dysfunction must be considered when planning an educational program for the kernicteric athetoid child.

Hammer, E. Needs of adolescents who have Usher's Syndrome. American Annals of the Deaf, 1978, 123, 389-394.

The needs of the adolescent with Usher's Syndrome are discussed in comparison with those of the non-handicapped adolescent. Emphasis is placed on the needs that these youths have in common with others and the complications brought about by visual and hearing disabilities.

Hicks, D. E. Usher's Syndrome: Programmatic considerations. American Annals of the Deaf, 1978, 123, 365-370.

This article discusses the symptoms of Usher's Syndrome, methods of detection, and various ideas about intervention strategies.

Vernon, M. Multiply Handicapped Deaf Children: Medical, Educational, and Psychological Considerations. Washington, D.C.: Council for Exceptional Children, 1969.

This book presents the author's findings in an investigation of some of the major causes of the secondary handicaps prevalent among deaf children.

Vernon, M. Overview of Usher's Syndrome: Congenital deafness and progressive loss of vision. Volta Review, 1974, 76, 100-105.

This article stresses the need for implementing programs of prevention and rehabilitation for Usher's syndrome.

Vernon, M. Prematurity and deafness: The magnitude and nature of the problem among deaf children. Exceptional Children, 1967, 33, 289-297.

This report investigates the relationship of premature birth to deafness with particular emphasis on the role of prematurity as a factor in multiple handicaps among deaf children. The results of various behavioral and physical variables are quantified and contrasted to normative data and to data on other groups of deaf children who have difficult etiologies of hearing loss. The neurophysiological origins of these are discussed, and suggestions for the future are offered.

## Additional Handicapping Conditions: Brain Injury and Cerebral Palsy

Auxter, D. Learning disabilities among deaf populations. Exceptional Children, 1971, 37, 573-577.

This study investigates the perceptual-motor characteristics which might account for the differences in academic learning in deaf populations with similar CA and IQ. The findings indicate that significant differences existed between the groups on tasks involving motor speed, muscular strength, and motor planning. Significant differences were not found between the groups on tasks involving the balance mechanism or sensory utilization. Comments are given on the feasibility of programs to improve these deficiencies.

Costello, P. Where does Mike belong? The Volta Review, 1959-1960, 61-62, 66-67, 91.

Attention is drawn to the special needs of cerebral palsied deaf children. If they are placed in rehabilitation centers for crippled children, they receive physical and occupational therapy. However, they are also in need of professionals trained in audiology and deaf education. One program which provides both, the Crotched Mountain Rehabilitation School for the Deaf in New Hampshire, is profiled. An index is provided of all schools in the United States and Canada which offer programs for cerebral palsied deaf children as of 1960.

Pauline, S. M. The multiple-handicapped deaf child. The Volta Review, 1960, 62, 350-355.

Background information concerning the brain-injured child and the cerebral palsied child is provided. Identifiable symptoms of brain injury are delineated such as difficulty in patterned behavior and in perception, distractibility, hyperactivity and perseveration. Specific techniques for classroom teachers are suggested. A similar format of discussion follows for the C.P. child. A long and detailed list of characteristics of the C.P. student is outlined for the reader, accompanied by possible classroom techniques.

Shere, M. O. The cerebral palsied child with a hearing loss. *The Volta Review*, 1960, *62*, 438-441.

Stereotypes attached to cerebral palsied children are explored. The author sets out to dispel some of these commonly held beliefs by citing studies of cerebral palsied children and drawing upon her own experience. These and other findings are then related to the education and management of the hearing impaired C.P. child.

Sortini, A. J. Rehabilitation of brain-damaged children. *The Volta Review*, 1961, *63*, 20-23.

The author begins with a clinical picture of the brain-injured deaf child. Mentally retarded, emotionally disturbed, cerebral palsied, and learning disabled children are all grouped under the brain-injured label. Certain problems are discussed which many of these children have in common. Two possible therapeutic approaches for these children--speechreading and auditory training are discussed with respect to the different types of handicaps.

Vernon, M. Clinical phenomenon of cerebral palsy and deafness. *Exceptional Children*, 1969, *36*, 743-752.

An investigation was conducted on all children diagnosed as cerebral palsied and deaf at the California School for the Deaf at Riverside over a 12-year period. The author discusses the data on intelligence, psychological adjustment, educational achievement, communication skills, physical disabilities, audiometry, etiology, and prevalence. Suggestions for prevention and rehabilitation are given.

Zamochnick, A. D. A perspective on deafness and cerebral palsy. *Journal of Rehabilitation of the Deaf*, 1973, *7*, 6-14.

The author, himself an Rh athetoid with moderate involvement and severe hearing impairment, comments on his own social and academic experiences. Aspects of vocational training and placement of deaf cerebral-palsy persons who are able to work are discussed.

Zwirecke, R. J., et al. The incidence of neurological problems in a deaf school age population. *American Annals of the Deaf*, 1974, *121*, 405-408.

Findings of neurological testing for children in the St. Mary's School for the Deaf in Buffalo over a period of five years are presented.

## Mentally Retarded Deaf

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DiBenedetto, T. Problems of the deaf-retarded: A review of the literature. *Education and Training of the Mentally Retarded*, 1976, *11*, 164-171.

The author discusses the problems of this population as compiled from several sources. The areas examined include the incidence rate, which handicap should be considered more disabling, the terminology used to classify these children, the emotional development, and the recommendations to improve diagnosis and treatment.

Hall, S. M., and Talkington, L. Learning by doing: A unit approach for deaf retarded. Journal for Special Educators of the Mentally Retarded, 1972, 8, 109-112.

A threefold approach for the education of deaf retarded children is presented, which concentrates on vocabulary building, language stimulation, and acquisition of independent living skills.

Luszki, W. A. Application of deprivation concepts to the deaf retarded. Mental Retardation, 1964, 2, 164-171.

The article applies the concepts and findings of research in the areas of early deprivation and transitory sensory deprivation to an understanding of the deaf retarded. Material from these two areas is presented as it relates to the effects of early deafness on: (1) mother-child relationships; (2) cognitive and learning abilities; (3) personality development; and (4) social relations. The author suggests some implications for rehabilitation which are mostly on the preventive side.

Mitra, S. B. Guidelines for hospitalized retarded-deaf children. American Annals of the Deaf, 1971, 116, 385-388.

This paper provides a guide for establishing a program for multi-handicapped deaf children in institutions. The philosophy and objectives for such a program are discussed, as well as instructional grouping and content areas such as self-help skills, language development, and prevocational activities. Flexibility in providing modes of communication is encouraged. Emphasis is placed on the benefits of one to one instruction and the adaption of instruction to the individual child's level. The author also presents a standard for teacher qualifications, encouraging a background in both special and deaf education and a practicum experience with the deaf-retarded.

Shepard, C. H. Teaching language to mentally retarded deaf children. American Annals of the Deaf, 1976, 121, 366-369.

The literature concerning language programs for mentally retarded deaf is briefly reviewed, followed by a more in-depth look at one of these programs at the Oregon State School for the Deaf.

## Emotionally Disturbed Deaf

Altshuler, K. Z. Identifying and programming for the emotionally handicapped deaf child. In D. Naiman (Ed.), Needs of Emotionally Disturbed Hearing Impaired Children, New York: New York University, 1975.

The author discusses the difficulty in identification of emotionally disturbed deaf children and argues against universal use of behavior modification for these children. Use of a Piagetian approach to curriculum, involvement of parents, various psychotherapeutic techniques, and a team approach are discussed.

Lennan, R. K. Report on a program for emotionally disturbed deaf boys. American Annals of the Deaf, 1970, 115, 469-480.

The California School for the Deaf at Riverside conducted a study with sixteen emotionally disturbed deaf boys between the ages of seven and twelve. Traditional educational methods don't work with these deaf children so it was necessary to use such techniques as behavior modification to help these children reach a state of readiness for classroom work. The author found that there was a higher incidence of emotional disturbance among multi-handicapped children than among those whose only handicap is deafness. At the end of the first year of the program three of the boys returned to their regular deaf classes, one was hospitalized, and one child died. At the end of the second year, six more boys were transferred to their regular classes.

The author discusses the incidence of emotional disturbance among the multiply handicapped deaf population. An intervention program at the California School for the Deaf at Riverside is described.

Naiman, D., Schein, J. D., & Stewart, L. New vistas for emotionally disturbed deaf children. American Annals of the Deaf, 1973, 118, 480-487.

This report discusses a pilot study in New York City for emotionally disturbed deaf children. The goal of the program was to bring back into the educational system those children who were found to be too disruptive to be accommodated in regular classrooms. The general design of the study is outlined including the theory, the curriculum approach (which is to use any method available), and the assessment plan. The actual operation of the program is discussed through the area of preparation and staffing of teachers, the physical plant, the children themselves and parental involvement. Some actual activities as well as results are also presented.

Naiman, D. W. Parents of emotionally disturbed deaf children. In D. Naiman (Ed.), *Needs of Emotionally Disturbed Hearing Impaired Children*. New York: New York University, 1975.

The author discusses the parent program established by the New York University Deafness Research and Training Center. Various aspects of the program include counseling of parents, communication training, and group activities.

Rainer, J. D. Severely emotionally handicapped hearing impaired children. In D. Naiman (Ed.), *Needs of Emotionally Disturbed Hearing Impaired Children*. New York: New York University, 1975.

The author describes the history of psychiatric involvement in the field of deafness and the incidence of behavioral disturbance among the hearing impaired. A model program for a treatment center for children who are unable to remain in the regular classroom because of behavior problems is described.

## Deaf-Blind

Altshuler, K. Z. The personal, social, and emotional implications of deaf blindness. *American Annals of the Deaf*, 1978, *123*, 372-376.

The author contrasts the difficulties caused by deaf-blindness which is congenital or occurs in infancy and that which occurs later in life. Typical personality traits are discussed and suggestions for intervention, including parent counseling, are presented.

Bennett, F. et al. Assessment techniques for deaf-blind children. *Exceptional Children*, 1979, *45*, 287-289.

The authors discuss the difference between the intellectual capacities of deaf-blind children and their actual performance levels. The difficulties of psychological assessment is emphasized and suggestions for instruments presented, including the Deaf-Blind Program and Ability Screening Test and an adaptation of the Peabody Intellectual Performance Scale.

Bettica, L. J. Counseling the Usher's Syndrome deaf blind individual. *Journal of Rehabilitation of the Deaf*, 1979, *12*, 51-56.

A description of Usher's Syndrome, with age of onset and characteristics, is presented. Two areas of counseling are discussed, explaining the diagnosis and what it physically means to the patient, and explaining the type of work the patient will be able to do. Presented also in the article are several categories of labor skills, vocations, and academic work the patient may be able to use.

Calvert, D. R., Reddell, R. C., Jacobs, U., & Baltzer, S. Experiences with preschool deaf-blind children. Exceptional Children, 1972, 39, 415-421.

The article describes the design and results of a preschool program for deaf-blind children at the San Francisco Hearing and Speech Center. The beginnings of the pilot program are outlined and the application of operant conditioning techniques to 20 deaf-blind children under the age of six are discussed. In addition, the authors describe the use of conditioned audiovisual response audiometry and evaluation procedures which include a behavioral profile.

Dantona, R. Services for deaf-blind children. Exceptional Children, 1976, 43, 172-174.

The author describes the incidence of deaf-blindness and its etiologies. Various services to this population are discussed with an emphasis on the efforts of the Regional Centers for Deaf-Blind Children.

Dunham, J. The deaf-blind. In Disability and Rehabilitation Handbook, R. M. Goldenson (Ed.), New York: McGraw Hill, 1978, 349-354.

This chapter provides an introduction to the etiologies of the deaf-blind, a brief incidence, history of services, and educational problems. The specific problems are: (1) lack of communication; (2) problems with mobility; and, (3) reduction of environmental experience. The author tells of some of the services available, as well as educational devices that can be used with the deaf-blind.

Freedman, S. Support services and alternatives to institutionalization for deaf-blind children. Visual Impairment and Blindness, 1978, 72, 249-254.

This report proposes a long-term program to serve deaf-blind children. The article is based on a study in Connecticut to investigate the alternatives for deaf-blind children. The recommendations of the study were based on individual assessment of each child, discussions with the professionals, review of records, meetings with parents and a review of the literature. The author discusses existing programs at day centers and residential facilities prior to introducing the alternatives, including the establishment of group homes at four difference levels to meet the different needs of the clients.

Hammer, E. K. Rehabilitation of deaf-blind persons. Journal of Rehabilitation of the Deaf, 1974, 7-8, 60-63.

The author presents the difficulty of using traditional rehabilitation models with the deaf-blind. He suggests a behavioral model which is designed to move the client toward independent functioning. Modifications in programs of rehabilitation centers are discussed.

Henry, V., & Lyall, J. H. Ability screening and program placement for deaf-blind children and adults. Volta Review, 1973, 75, 227-231.

The authors describe the Deaf-Blind Program and Ability Screening Test (PAST) and the seven developmental areas which it measures. The usefulness of this instrument for placement purposes is presented.

Klein, C. Coping patterns of parents of deaf-blind children. American Annals of the Deaf, 1977, 122, 310-312.

The author illustrates some of the typical situations that parents of the deaf-blind must face. Emphasis is placed upon the understanding of parents' frustration by professionals and assistance for parents in handling their problems.

Klein, C. Variables to consider in developing and selecting services for deaf-blind children: Part II. American Annals of the Deaf, 1978, 123, 430-433.

In 1977, the Bureau for the Education of the Handicapped, Deaf-Blind Division, asked a group of professionals to devise methods and instruments for evaluating regional centers and services. In order of desired educational placement, the facilities are: (a) residential schools for blind or deaf; (2) public schools; (3) quality deaf-blind programs in developmental center; and (4) homebound services for deaf-blind children, used as a "last resort". Early intervention, which includes parental involvement and child evaluation is an aspect which should be included in all programs.

Lawson, L., & Myklebust, H. Opthalmological deficiencies in deaf children. Exceptional Children, 1970, 37, 21-30.

This article reports on the investigation conducted of 80 deaf children. The incidence of eye defects was twice that of hearing children. The disorders were equally distributed by age, but not directly related to learning success. The relationship between deafness and visual problems is discussed.

Suchman, R. G. Visual impairment among deaf children--frequency and educational consequences. Volta Review, 1968, 70, 31-35.

The author describes the results of a visual screening of 104 profoundly deaf children. She stresses the number of deaf children that have uncorrected visual problems. Suggestions are made as to training deaf children in visual tasks to allow more accurate results in visual screening.

Thomas, L. Deaf-blind: The role of the deaf community. Journal of Rehabilitation of the Deaf, 1979, 12, 57-59.

The author discusses the isolation experienced by those with Usher's Syndrome and their rejection from the deaf community. She suggests that some of the responsibility should be with other members of the deaf community. Education to remove the stigma of the syndrome is needed.